Step-by-Step Guide

to

Open-E DSS V7 Active-Active iSCSI Failover

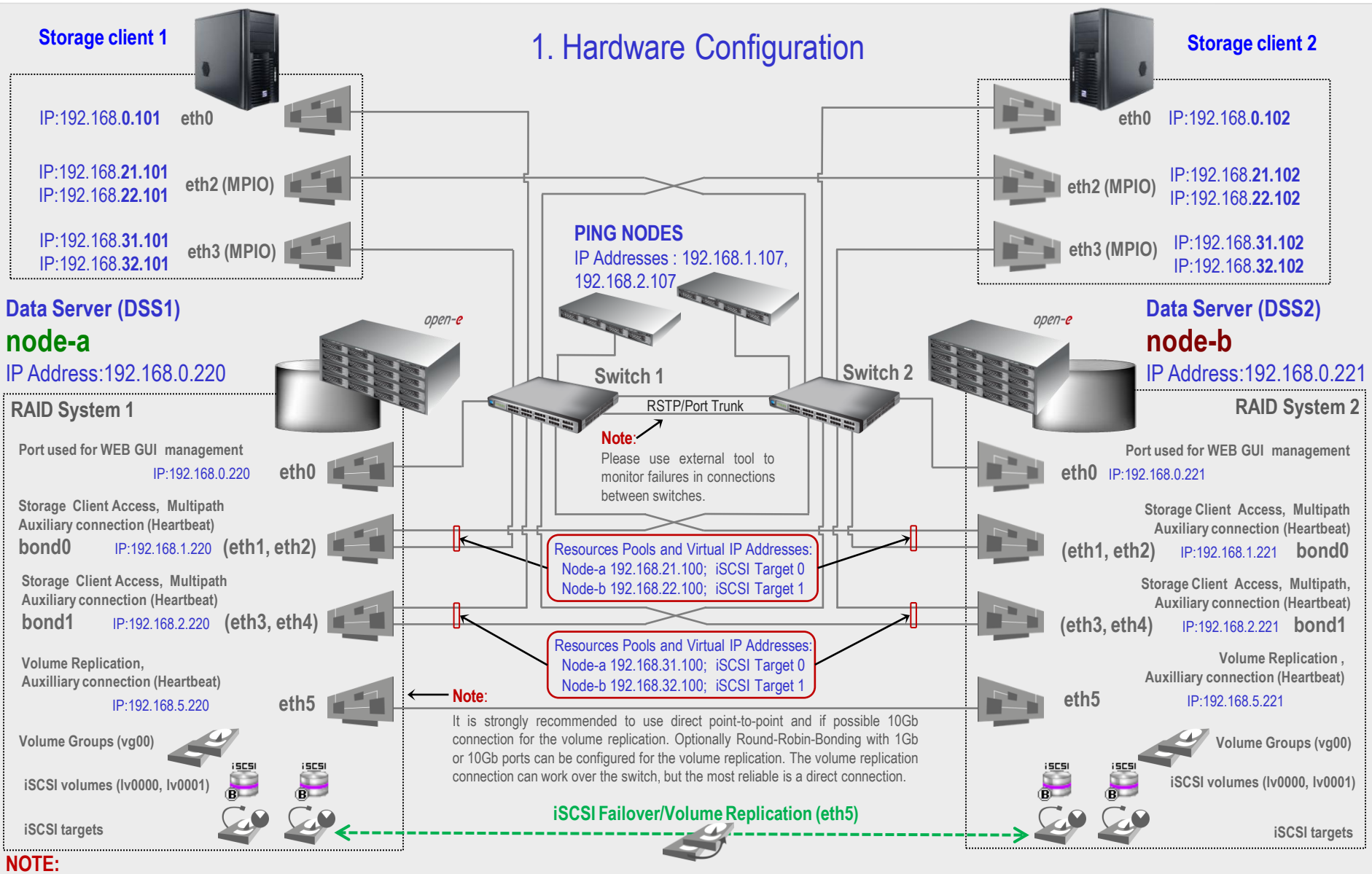
Software Version: DSS ver. 7.00 up01

Presentation updated: September 2012

To set up Active-Active iSCSI Failover, perform the following steps:

1. Hardware configuration:
2. Network Configuration
   - Set server hostnames and ethernet ports on both nodes (node-a, node-b)
3. Configure the node-b:
   - Create a Volume Group, iSCSI Volume
   - Configure Volume Replication mode (destination and source mode) – define remote mode of binding , create Volume Replication task and start the replication task
4. Configure the node-a
   - Create a Volume Group, iSCSI Volume
   - Configure Volume Replication mode (source and destination mode), create Volume Replication task and start the replication task.
5. Create targets (node-a and node-b)
6. Configure Failover (node-a and node-b)
7. Start Failover Service
8. Test Failover Function
9. Run Failback Function

Open-E DSS V7 Active-Active iSCSI Failover



NOTE:

To prevent switching loops, it's recommended to use RSTP (802.1w) or Port Trunking on network switches used to build A-A Failover network topology.

Open-E DSS V7 Active-Active iSCSI Failover

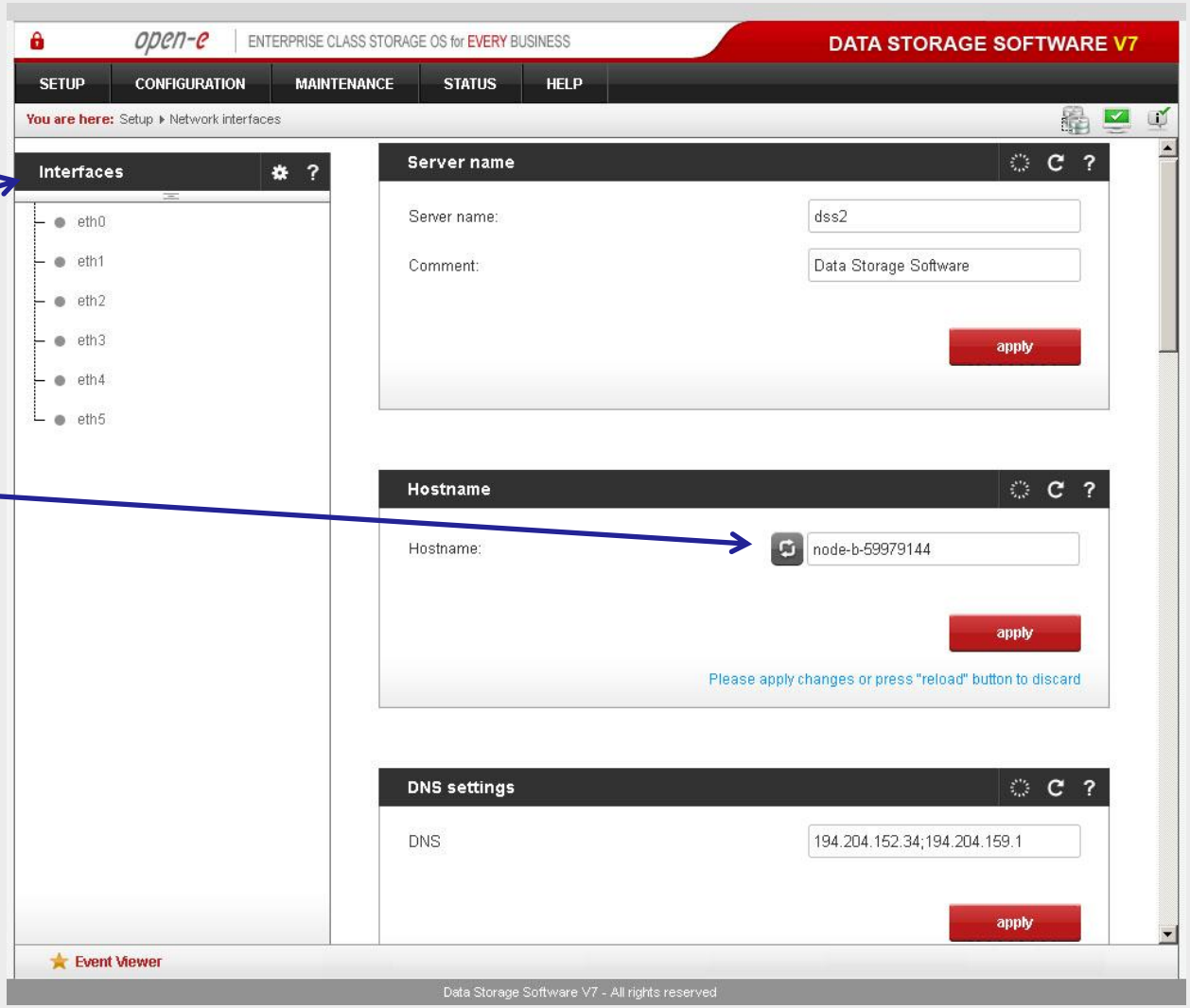
Data Server (DSS2)

node-b

IP Address:192.168.0.221

2. Network Configuration

After logging on to the Open-E DSS V7 (node-b), please go to **SETUP** and choose the **„Network interfaces"** option.
In the **Hostname** box, replace the "dss" letters in front of the numbers with „node-b" server, in this example **„node-b-59979144"** and click the apply button (this will require a reboot).



Open-E DSS V7 Active-Active iSCSI Failover

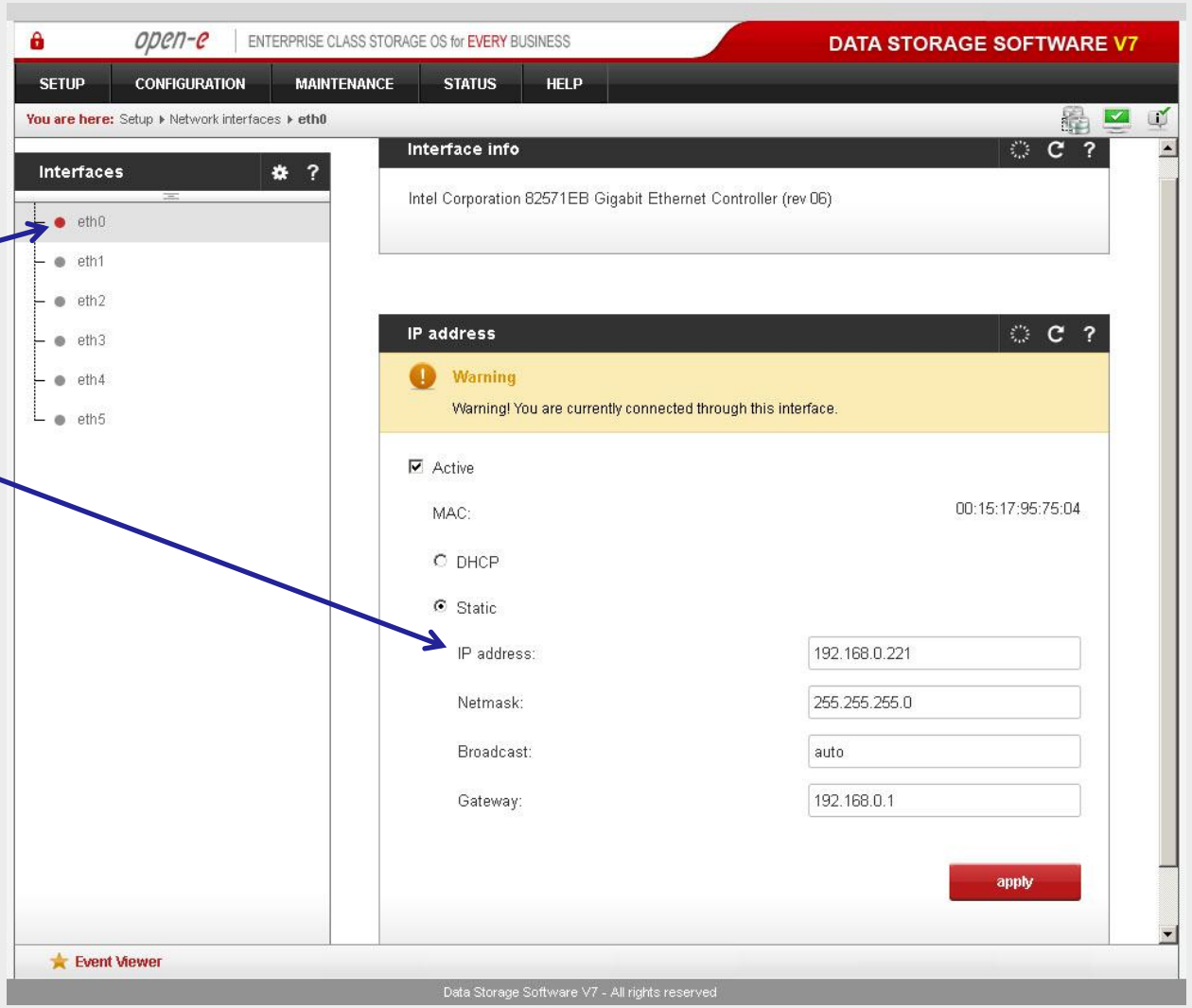
Data Server (DSS2)

node-b

IP Address:192.168.0.221

2. Network Configuration

Next, select **eth0** interface and in the **IP address field,** change the IP address from 192.168.0.220 to 192.168.0.221
Then click apply (this will restart network configuration).



Open-E DSS V7 Active-Active iSCSI Failover

Data Server (DSS2)

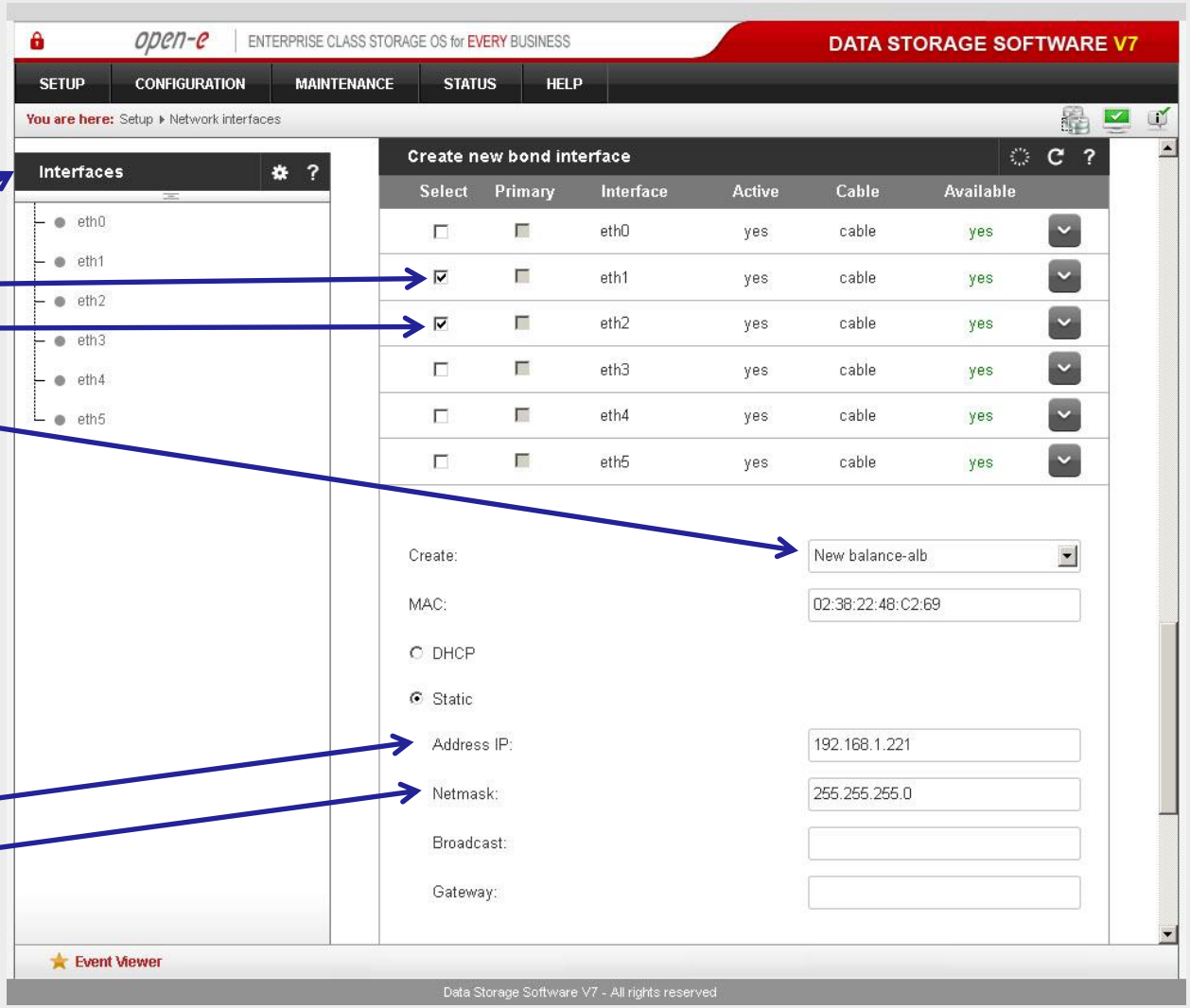
node-b

IP Address:192.168.0.221

2. Network Configuration

Once again, select **Interfaces** and in the „**Create new bond interface**" function check two boxes with **eth1** and **eth2**. Next, in the field **Create** select a bonding mode. In this example select **New balance-alb.**

Next, in the field **Adress IP** enter 192.168.1.221 and in the **Netmask** field enter 255.255.255.0 Afterwards, click the create button and confirm this action by clicking the yes button.



Open-E DSS V7 Active-Active iSCSI Failover

Data Server (DSS2)

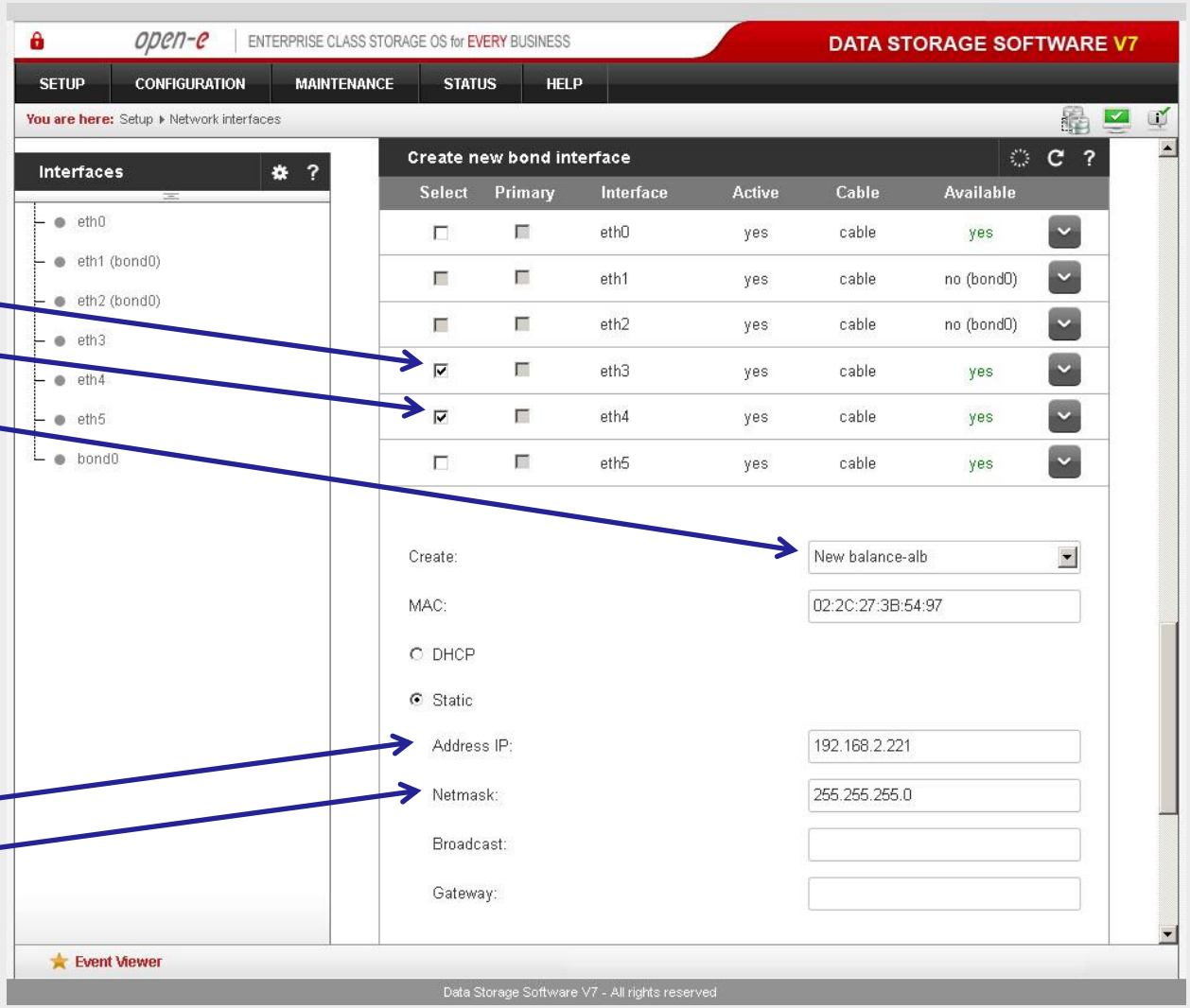
node-b

IP Address:192.168.0.221

2. Network Configuration

Again, in the „**Create new bond interface**" function check two boxes with **eth3** and **eth4**. Next, in the field **Create** select a bonding mode. In this example select **New balance-alb.**

Next, in the field **Adress IP** enter 192.168.2.221 and in the **Netmask** field enter 255.255.255.0 Afterwards, click the create button and confirm this action by clicking the yes button.



Open-E DSS V7 Active-Active iSCSI Failover

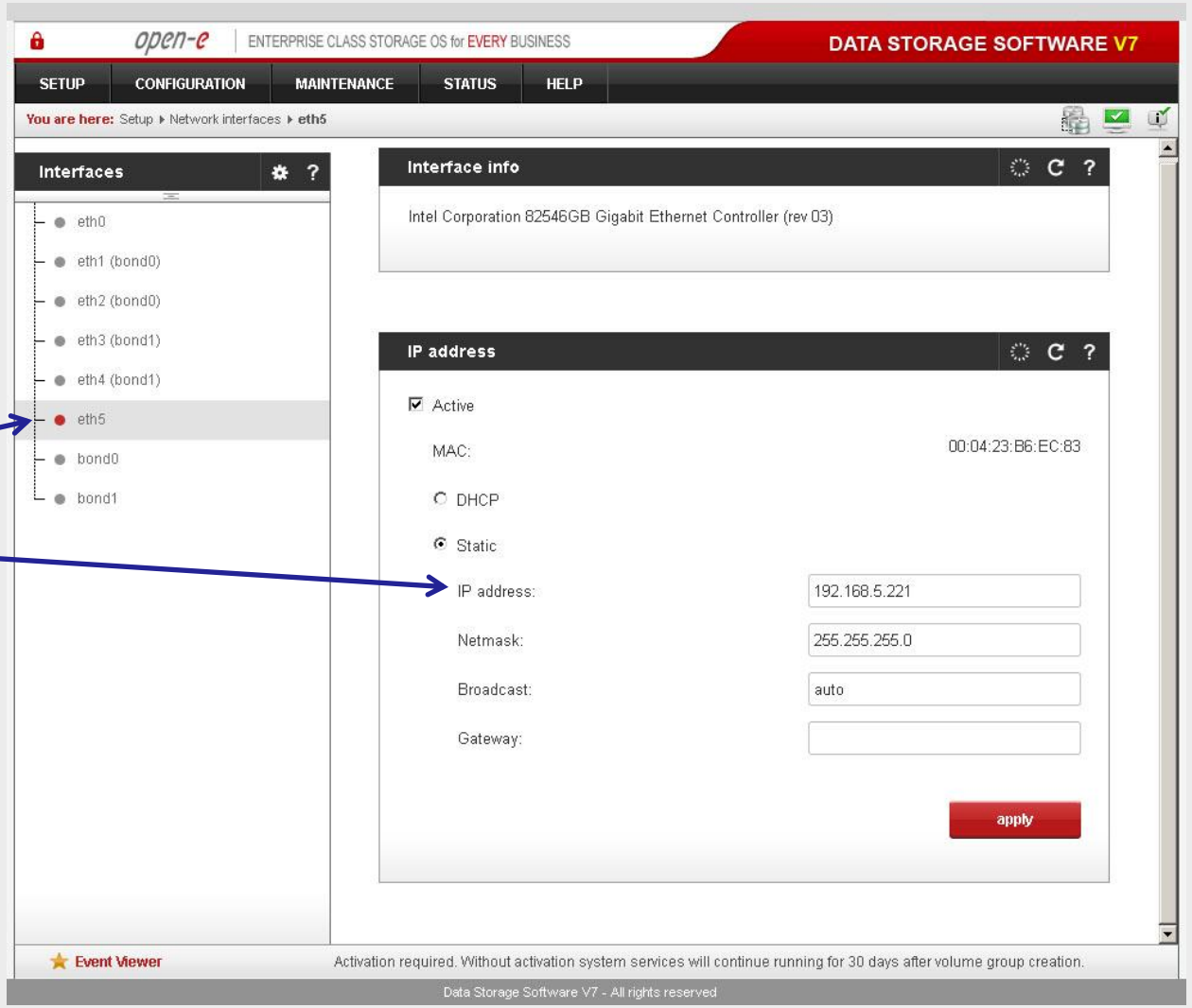
Data Server (DSS2)

node-b

IP Address:192.168.0.221

2. Network Configuration

Next, select **eth5** interface and in the **IP address field,** change the IP address from 192.168.5.220 to 192.168.5.221 and click the apply button.



Open-E DSS V7 Active-Active iSCSI Failover

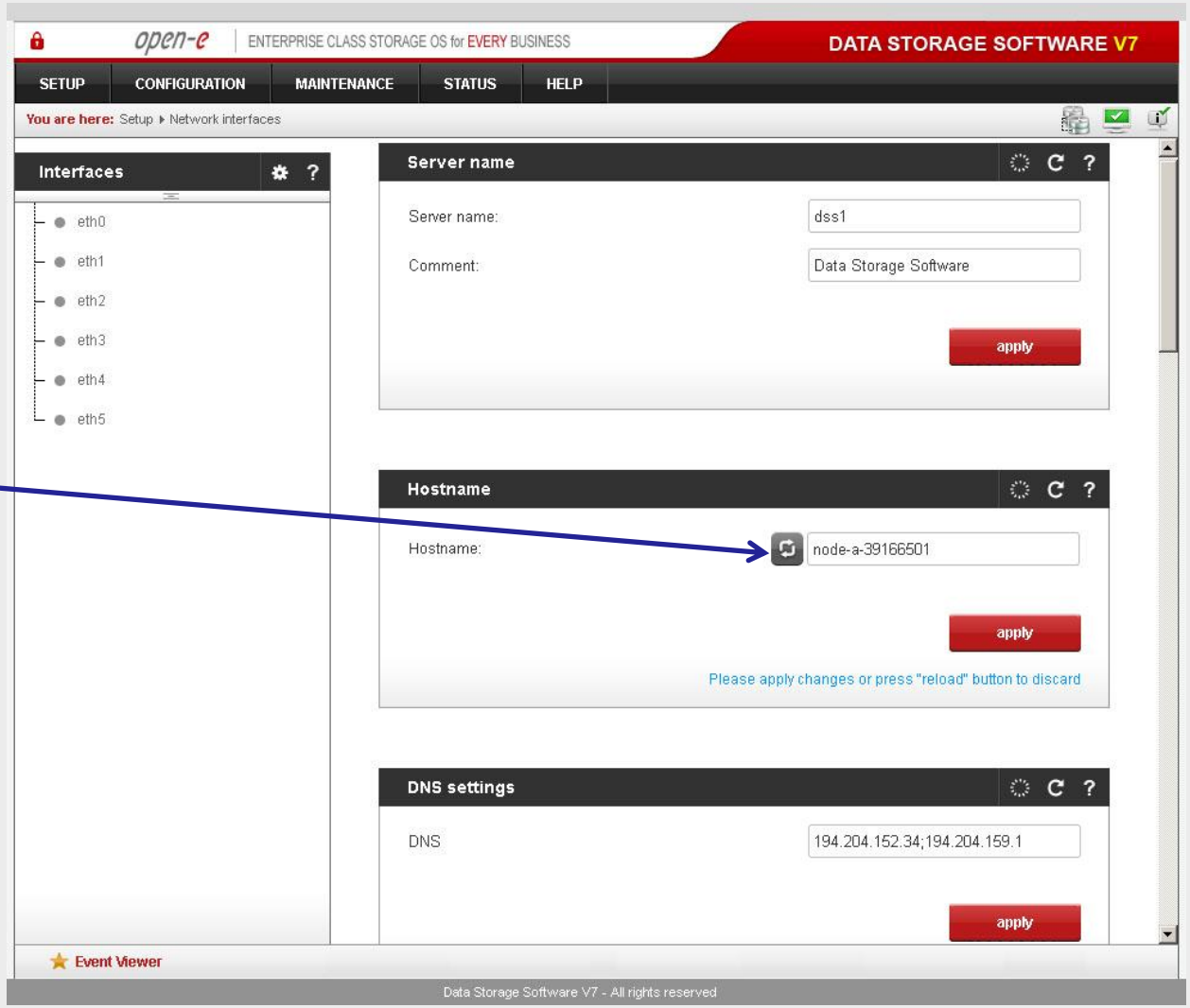
Data Server (DSS1)

node-a

IP Address:192.168.0.220

2. Network Configuration

After logging in to node-a, please go to **SETUP** and choose the **„Network interfaces"** option. In the **Hostname** box, replace the "dss" letters in front of the numbers with „node-a" server, in this example **„node-a-39166501"**and click apply (this will require a reboot).



Open-E DSS V7 Active-Active iSCSI Failover

Data Server (DSS1)

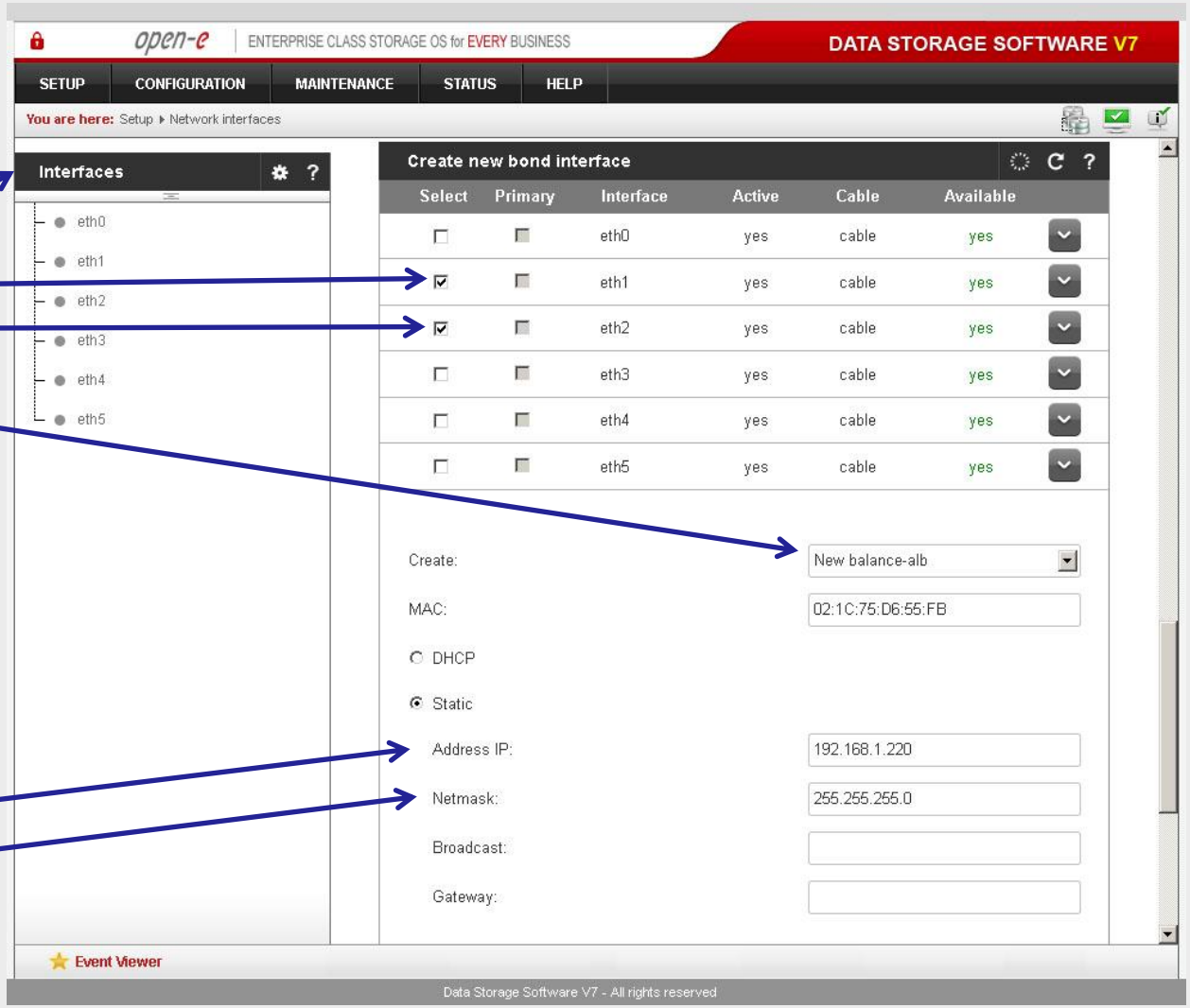
node-a

IP Address:192.168.0.220

2. Network Configuration

Next, select **Interfaces** and in the „**Create new bond interface**" function check two boxes with **eth1** and **eth2**. Next, in the field **Create** select a bonding mode. In this example select **New balance-alb.**

In the field **Adress IP** enter 192.168.1.220 and in the **Netmask** field enter 255.255.255.0 Afterwards, click the create button and confirm this action by clicking the yes button.



Open-E DSS V7 Active-Active iSCSI Failover

Data Server (DSS1)

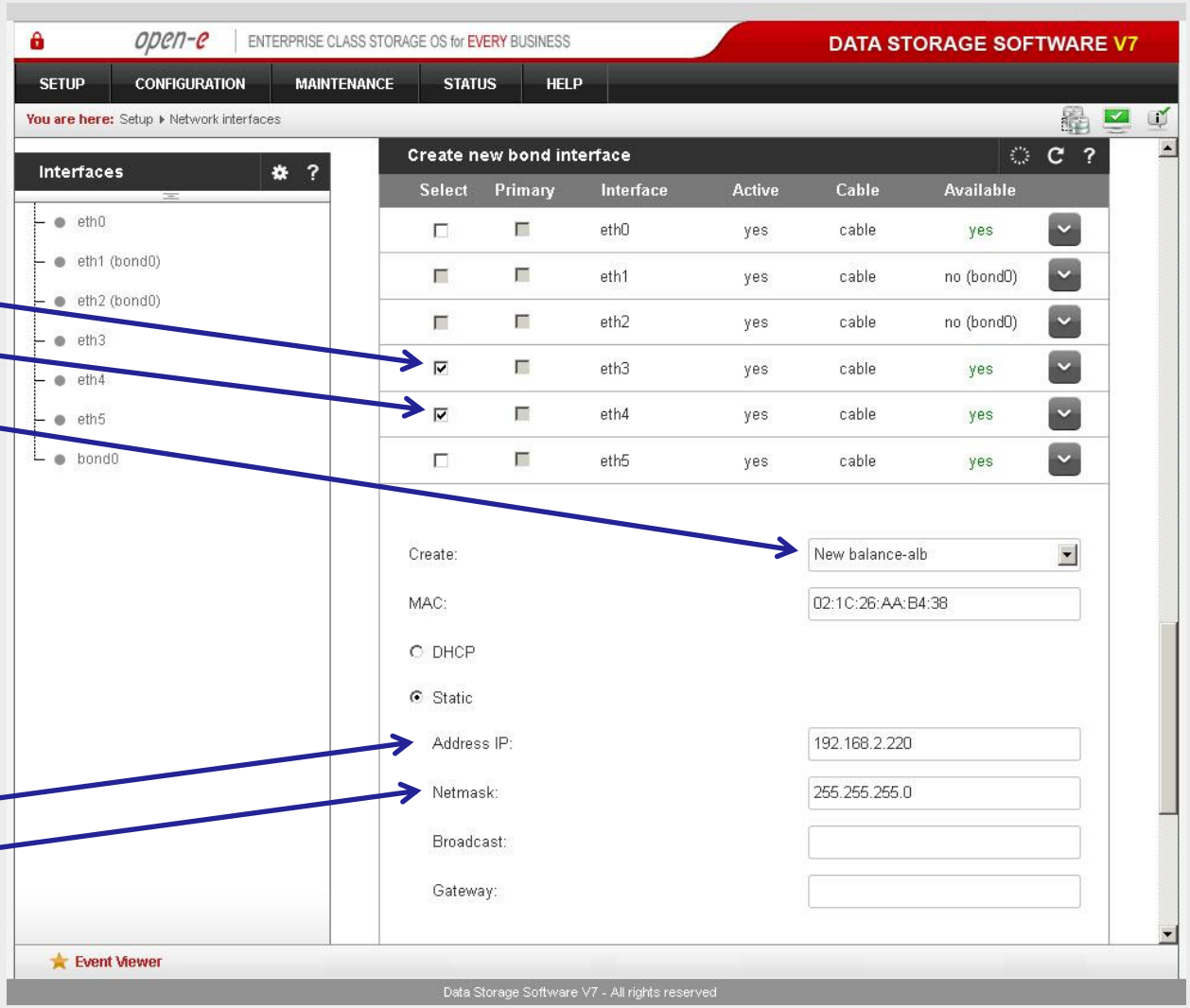
node-a

IP Address:192.168.0.220

2. Network Configuration

Again in the „**Create new bond interface**" function check two boxes with **eth3** and **eth4**. Next, in the field **Create** select a bonding mode. In this example select **New balance-alb.**

Next, in the field **Adress IP** enter 192.168.2.220 and in the **Netmask** field enter 255.255.255.0 Afterwards, click the create button and confirm this action by clicking the yes button.



Open-E DSS V7 Active-Active iSCSI Failover

Data Server (DSS2)

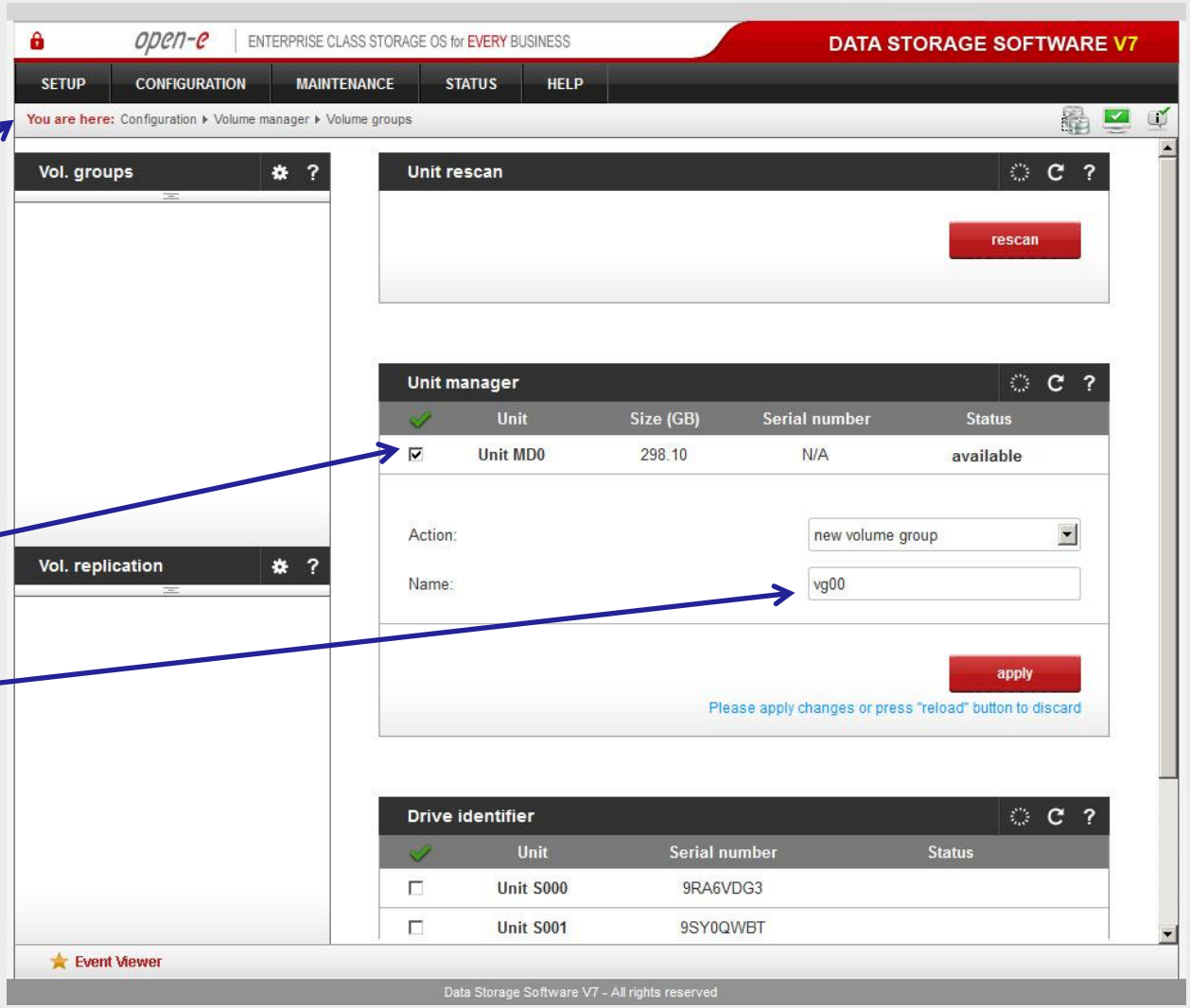
node-b

IP Address:192.168.0.221

3. Configure the node-b

Under **CONFIGURATION**, select **„Volume manager”**, then click on **„Volume groups”.**

In the **Unit manager** function menu, add the selected physical units (**Unit MD0** or other) to create a new volume group (in this case, **vg00**) and click the **apply** button.



Open-E DSS V7 Active-Active iSCSI Failover

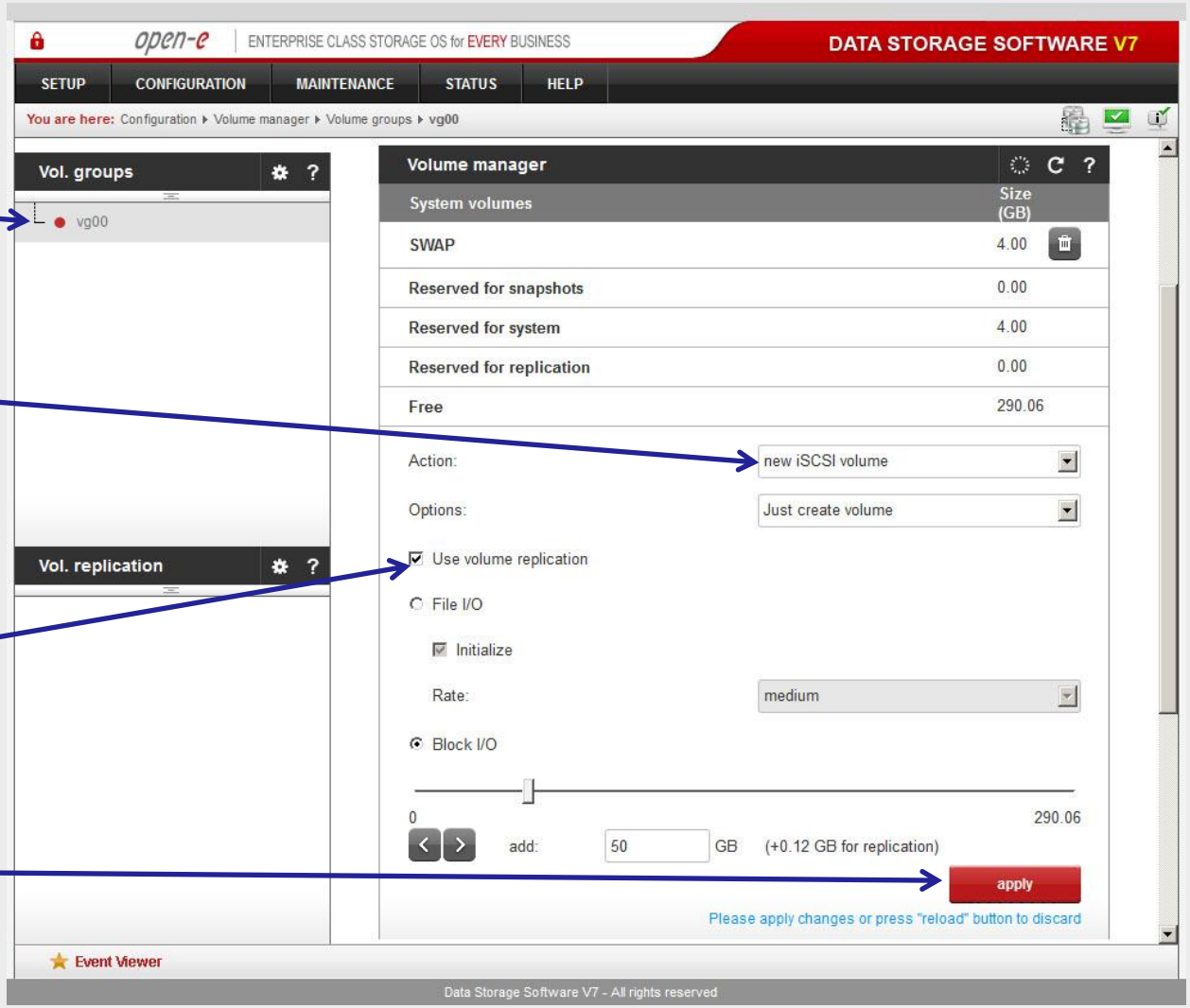
Data Server (DSS2)
node-b
IP Address:192.168.0.221

3. Configure the node-b

Select the appropriate volume group (**vg00**) from the list on the left and create a **new iSCSI volume** of the required size.
Please set 2 logical volumes in the Active-Active option.
The 1st logical volume (**lv0000**) will be a destination of the replication process on node-b.

Next, check the box **Use volume replication.**

After assigning an appropriate amount of space for the iSCSI volume, click the apply button



Open-E DSS V7 Active-Active iSCSI Failover

Data Server (DSS2)

node-b

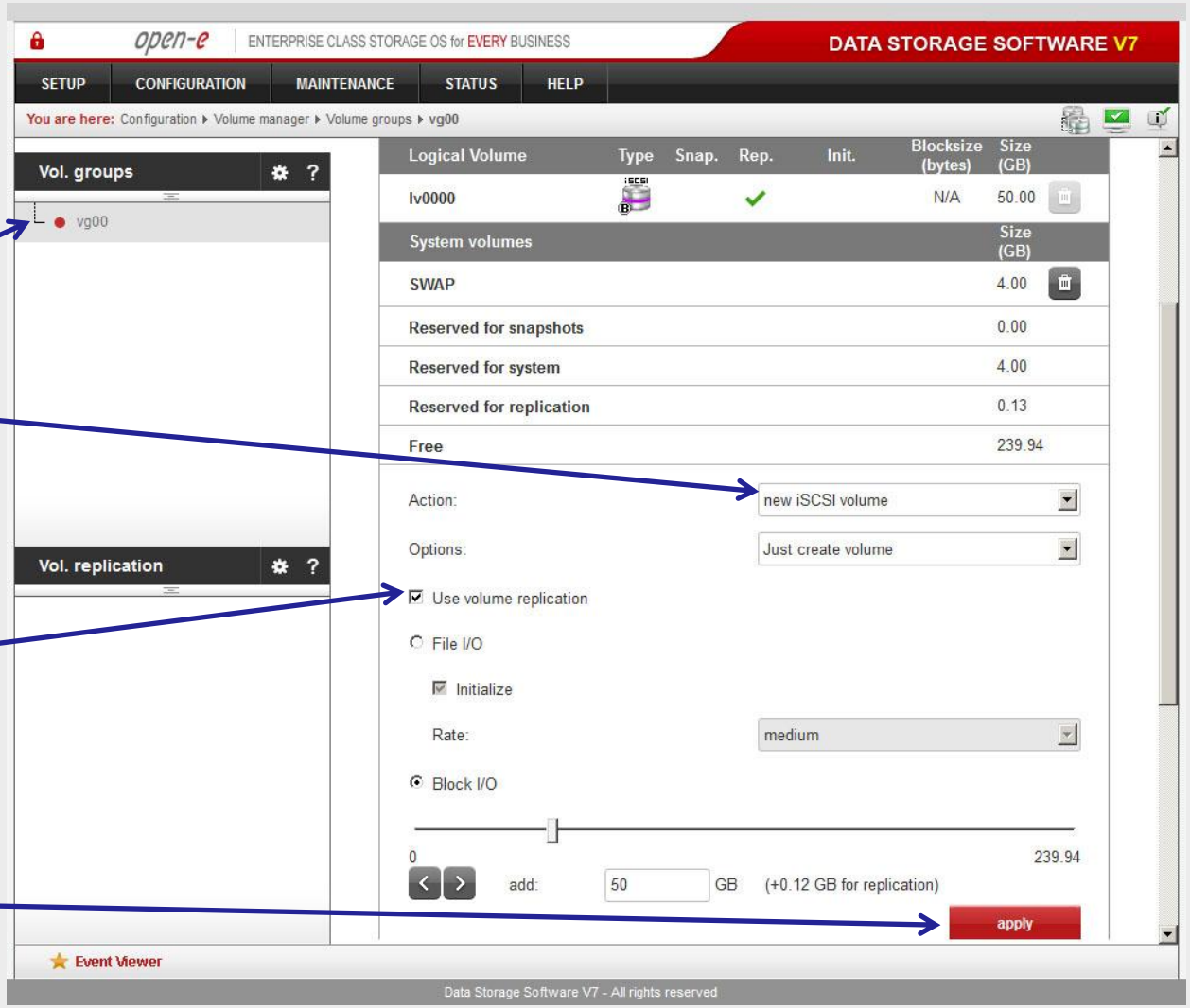
IP Address:192.168.0.221

3. Configure the node-b

Next, create the 2nd logical volume on the node-b. Logical volume (**lv0001**) will be the source of the replication process on this node.

Next, check the box **Use volume replication.**

After assigning an appropriate amount of space for the iSCSI volume, click the apply button.



Open-E DSS V7 Active-Active iSCSI Failover

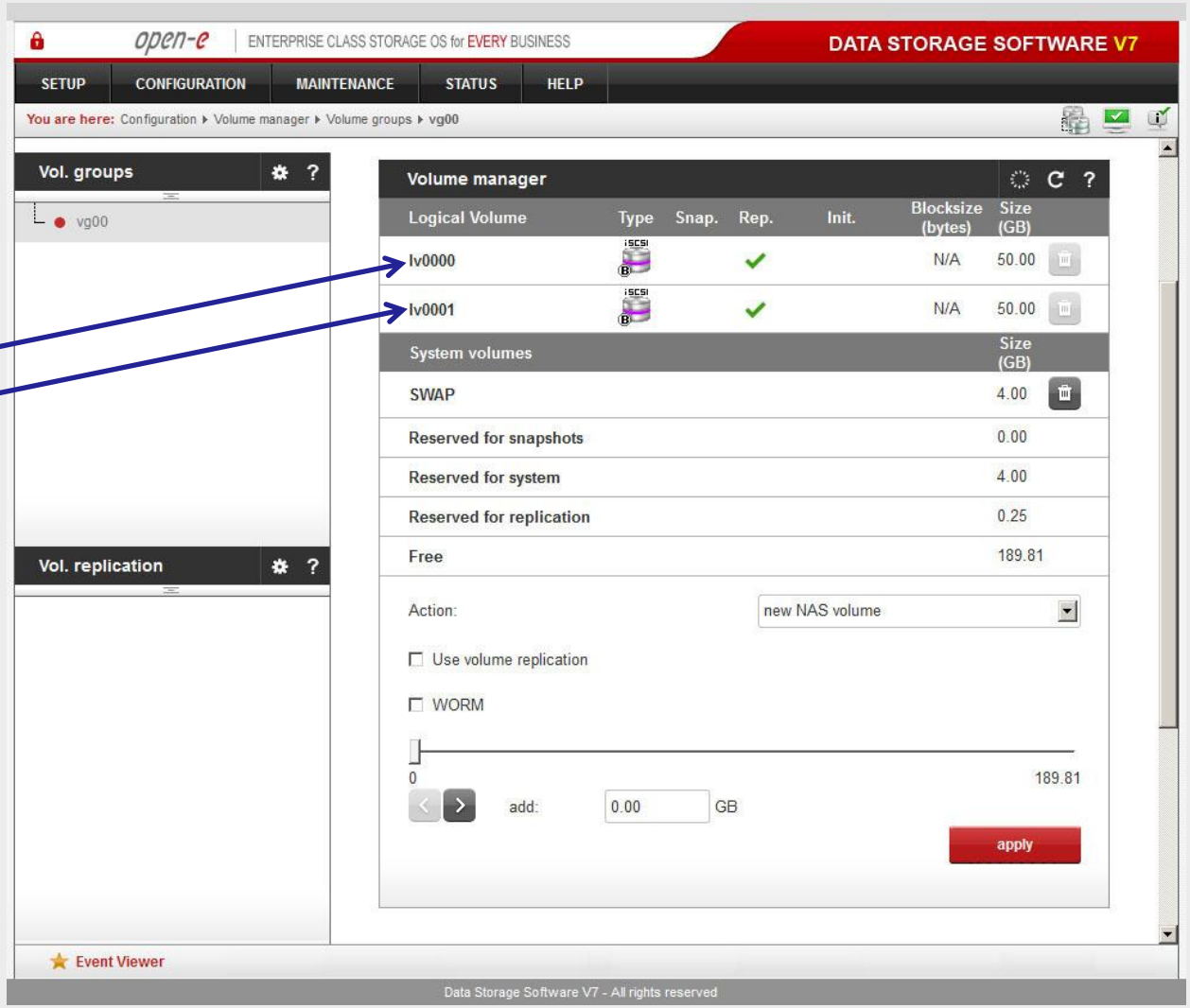
Data Server (DSS2)

node-b

IP Address:192.168.0.221

3. Configure the node-b

2 logical iSCSI Volume Block I/O are now configured.



iSCSI volume (lv0000) is set to destination

iSCSI volume (lv0001) is set to source

Open-E DSS V7 Active-Active iSCSI Failover

Data Server (DSS1)

node-a

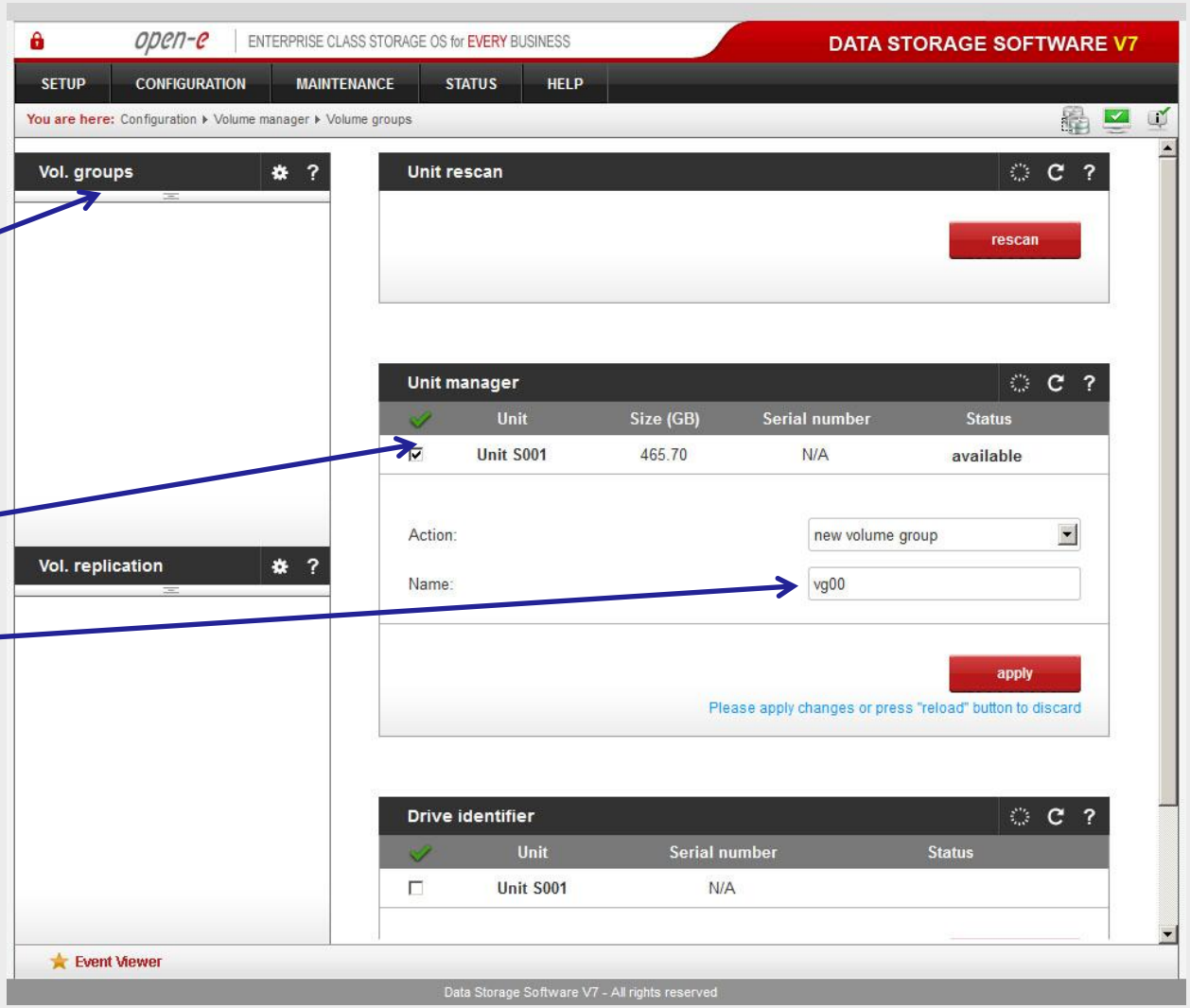
IP Address:192.168.0.220

4. Configure the node-a

Under **CONFIGURATION**, select **„Volume manager"** and then click on **„Volume groups".**

Add the selected physical units (**Unit S001** or other) to create a new volume group (in this case, **vg00**) and click **apply** button.

Volume Groups (vg00)



Open-E DSS V7 Active-Active iSCSI Failover

Data Server (DSS1)

node-a

IP Address:192.168.0.220

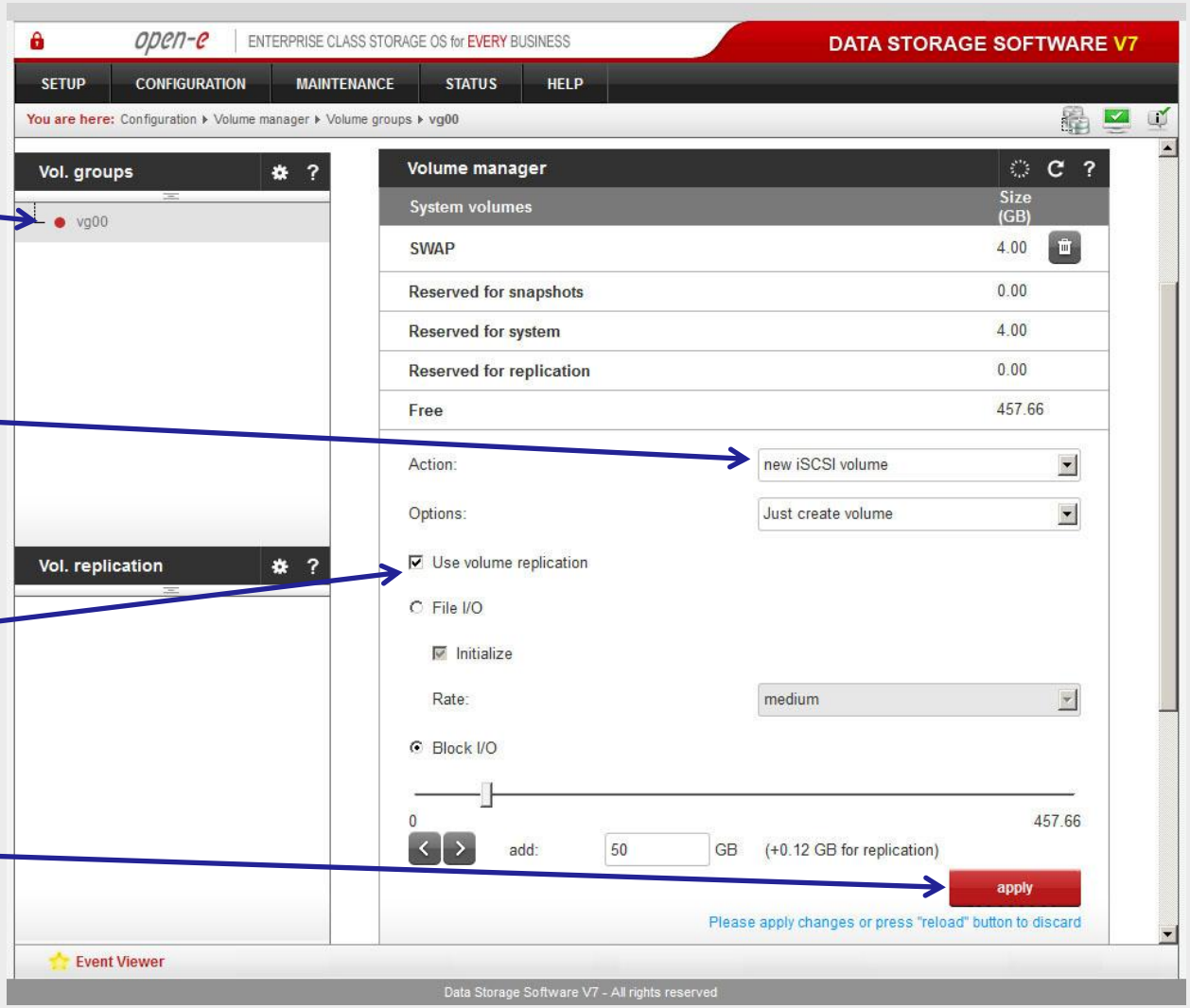
4. Configure the node-a

Select the appropriate volume group (**vg00**) from the list on the left and create a **new iSCSI volume** of the required size.
Please set 2 logical volumes in the Active-Active option.
The 1st logical volume (**lv0000**) will be a source of the replication process on the node-a.

Next, check the box for „**Use volume replication**"

After assigning an appropriate amount of space to the iSCSI volume, click the **apply** button.

NOTE:
The source and destination volumes must be of identical size.



Open-E DSS V7 Active-Active iSCSI Failover

Data Server (DSS1)

node-a

IP Address:192.168.0.220

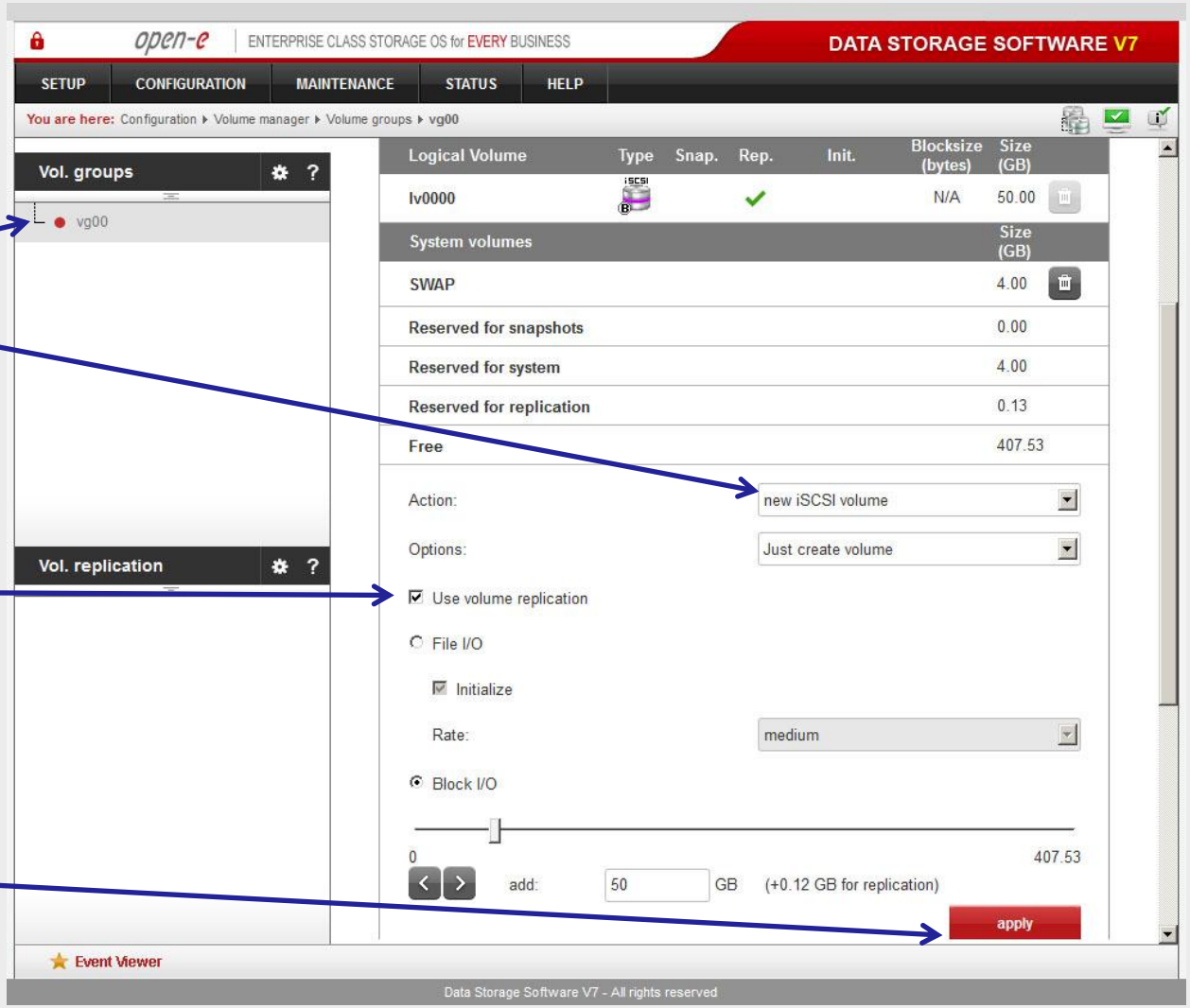
4. Configure the node-a

Next, create the 2nd logical volume on the node-a. Logical volume (**lv0001**) will be a destination of the replication process on this node.

Next, check the box for „**Use volume replication**”.

After assigning an appropriate amount of space to the iSCSI volume, click the apply button.

NOTE:
The source and destination volumes must be of identical size.



Open-E DSS V7 Active-Active iSCSI Failover

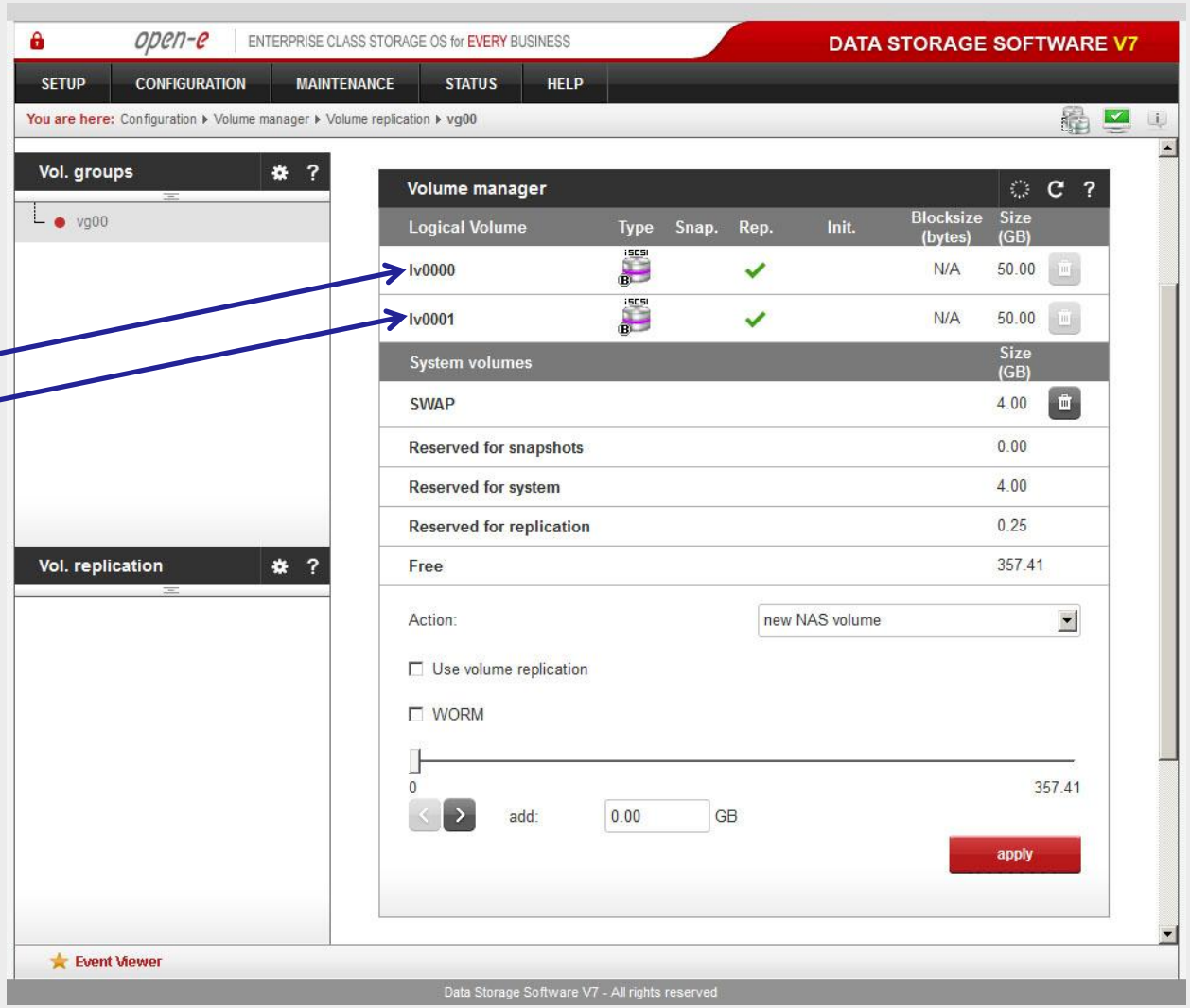
Data Server (DSS1)

node-a

IP Address:192.168.0.220

4. Configure the node-a

2 logical iSCSI Volume Block I/O are now configured.



iSCSI volume (lv0000) is set to source

iSCSI volume (lv0001) is set to destination

Open-E DSS V7 Active-Active iSCSI Failover

Data Server (DSS2)

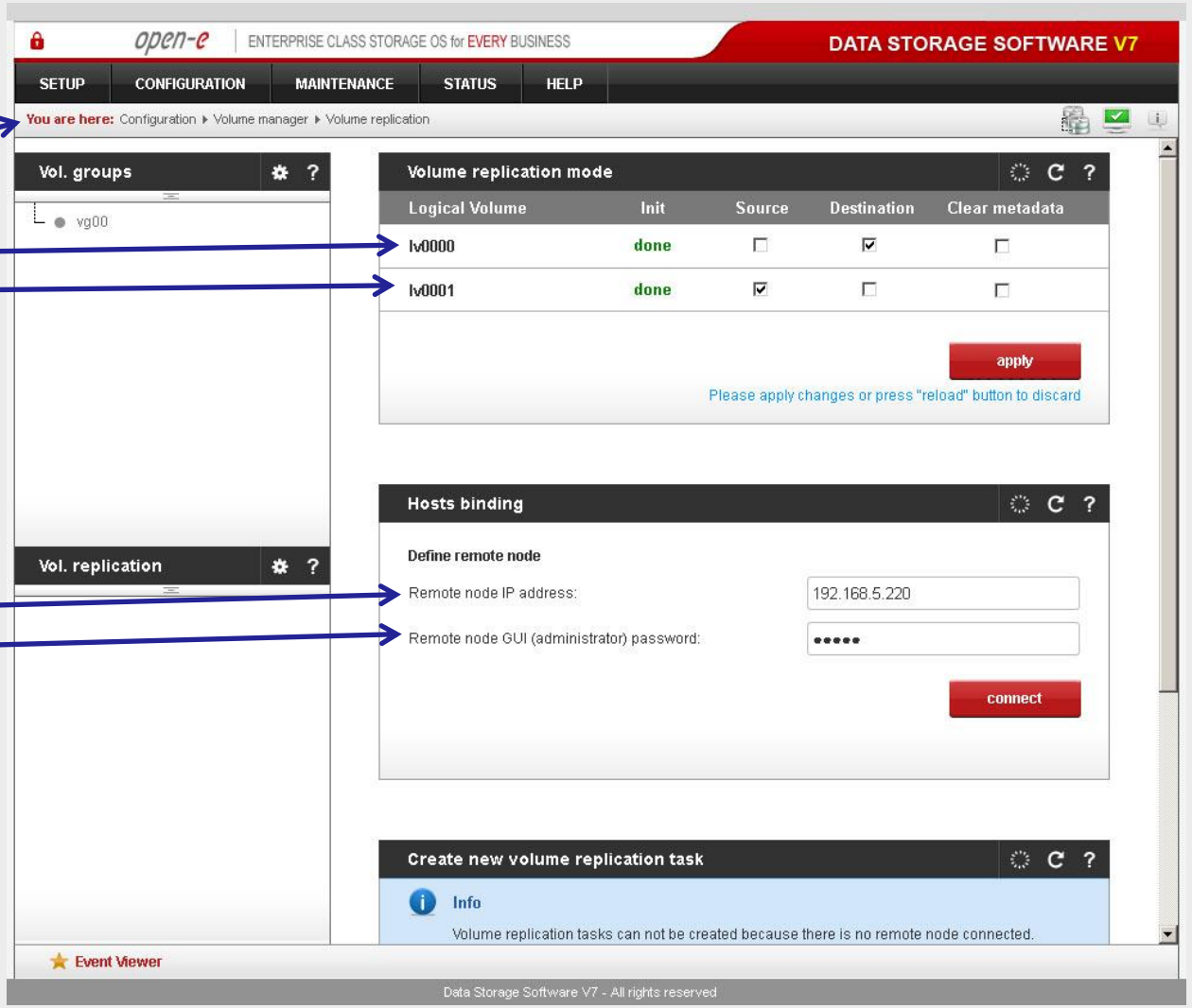
node-b

IP Address:192.168.0.221

3. Configure the node-b

Now, on the node-b, go to „**Volume replication**”.
Within **Volume replication mode** function, check the **Destination** box for **lv0000** and check the **Source** box for **lv0001**.
Then, click the apply button.

In the **Hosts binding** function, enter the IP address of node-a (in our example, this would be 192.168.5.220), enter node-a administrator password and click the apply button.



NOTE:

The remote node IP Address must be on the same subnet in order for the replication to communicate. VPN connections can work providing you are not using a NAT. Please follow example:

- node-a: 192.168.5.220
- node-b: 192.168.5.221

Open-E DSS V7 Active-Active iSCSI Failover

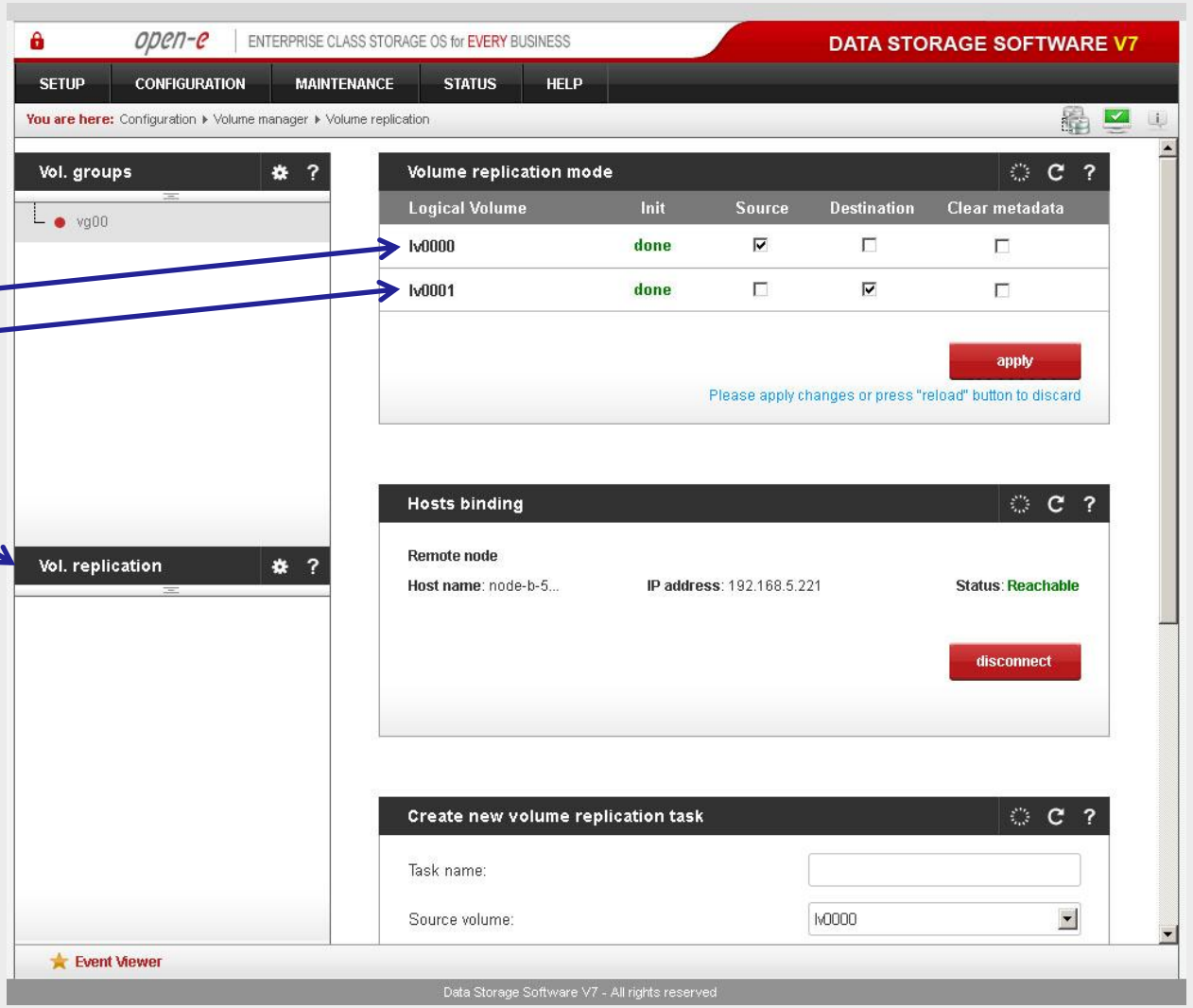
Data Server (DSS1)

node-a

IP Address:192.168.0.220

4. Configure the node-a

Next, on the node-a, go to **„Volume replication”**.
Within **Volume replication mode** function, check the **Source** box for **lv0000** and check the **Destination** box for **lv0001**.
Next, click the apply button.



Open-E DSS V7 Active-Active iSCSI Failover

Data Server (DSS1)

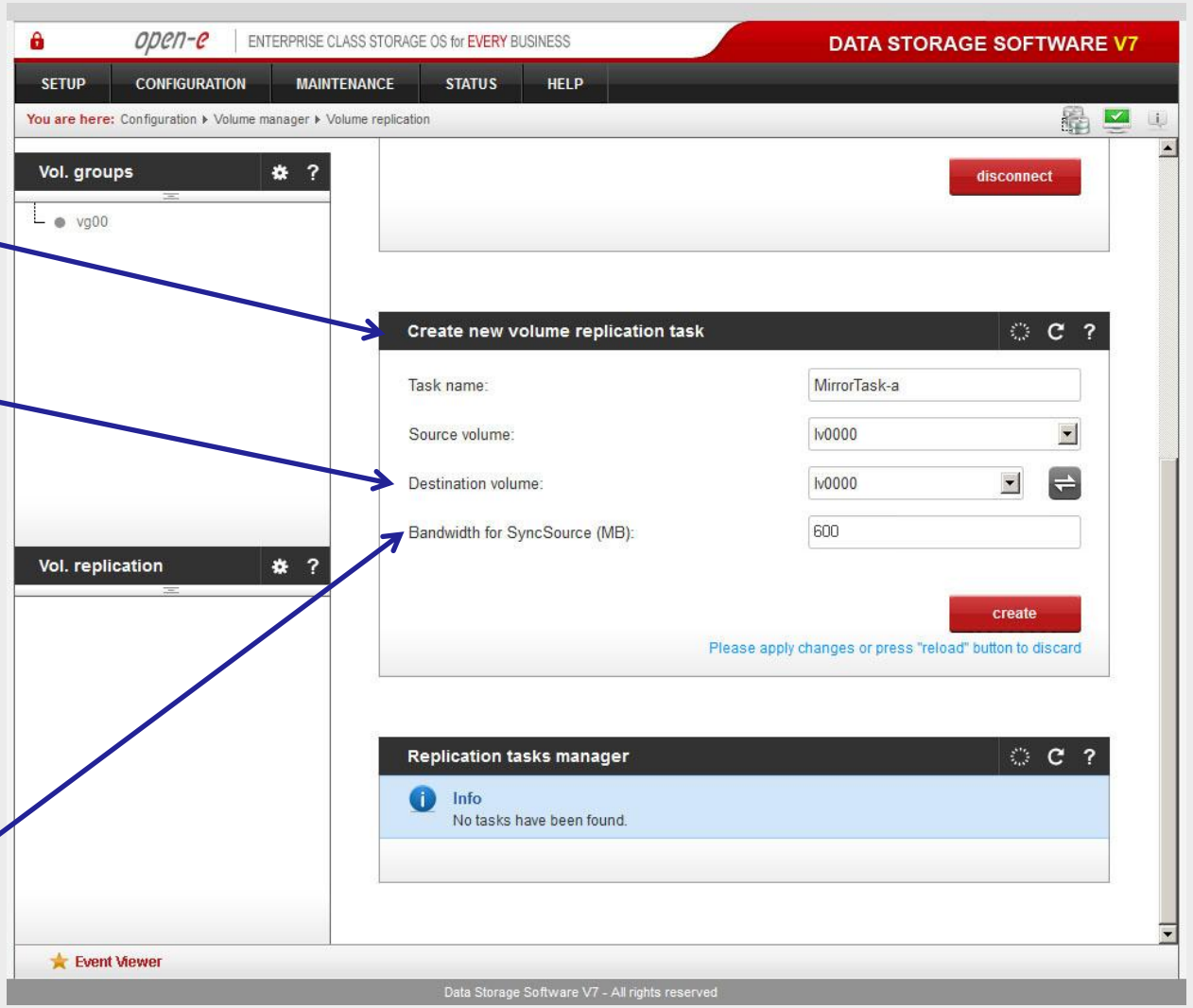
node-a

IP Address:192.168.0.220

4. Configure the node-a

In the **Create new volume replication task**, enter the task name in the **Task name** field, then click on the ⇌ button.
In the **Destination volume** field, select the appropriate volume (in this example, **lv0000**).

In case of a 10GbE connection it is recommended to set for the replication a higher **Bandwidth for SyncSource (MB)**. To achieve better performance you can set 500MB. In the example, maximum 600MB is used. Next, click the create button.



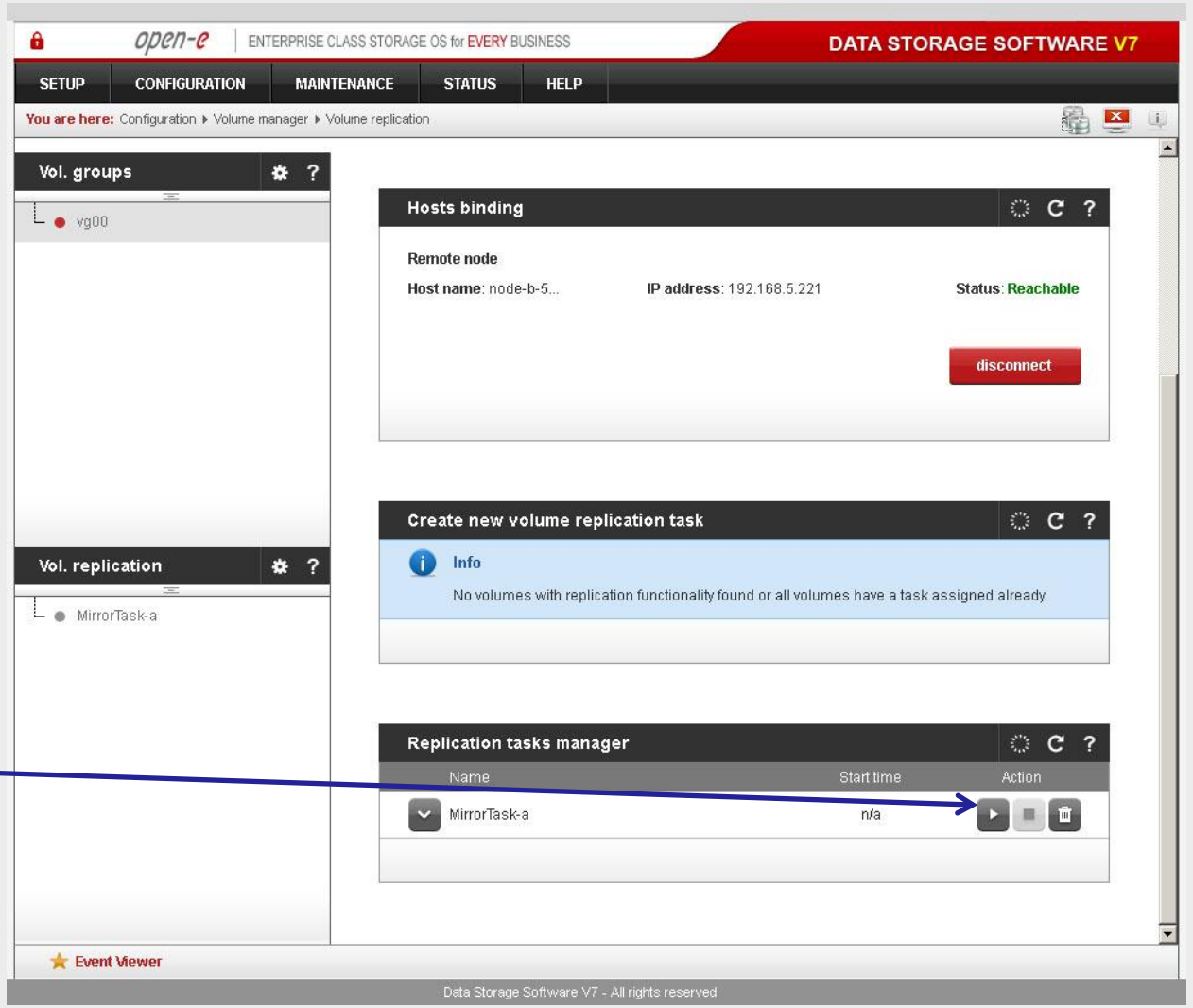
Open-E DSS V7 Active-Active iSCSI Failover

Data Server (DSS1)

node-a

IP Address:192.168.0.220

4. Configure the node-a



Now, in the **Replication task manager** function, click the corresponding „play" button to start the Replication task on the node-a.

Open-E DSS V7 Active-Active iSCSI Failover

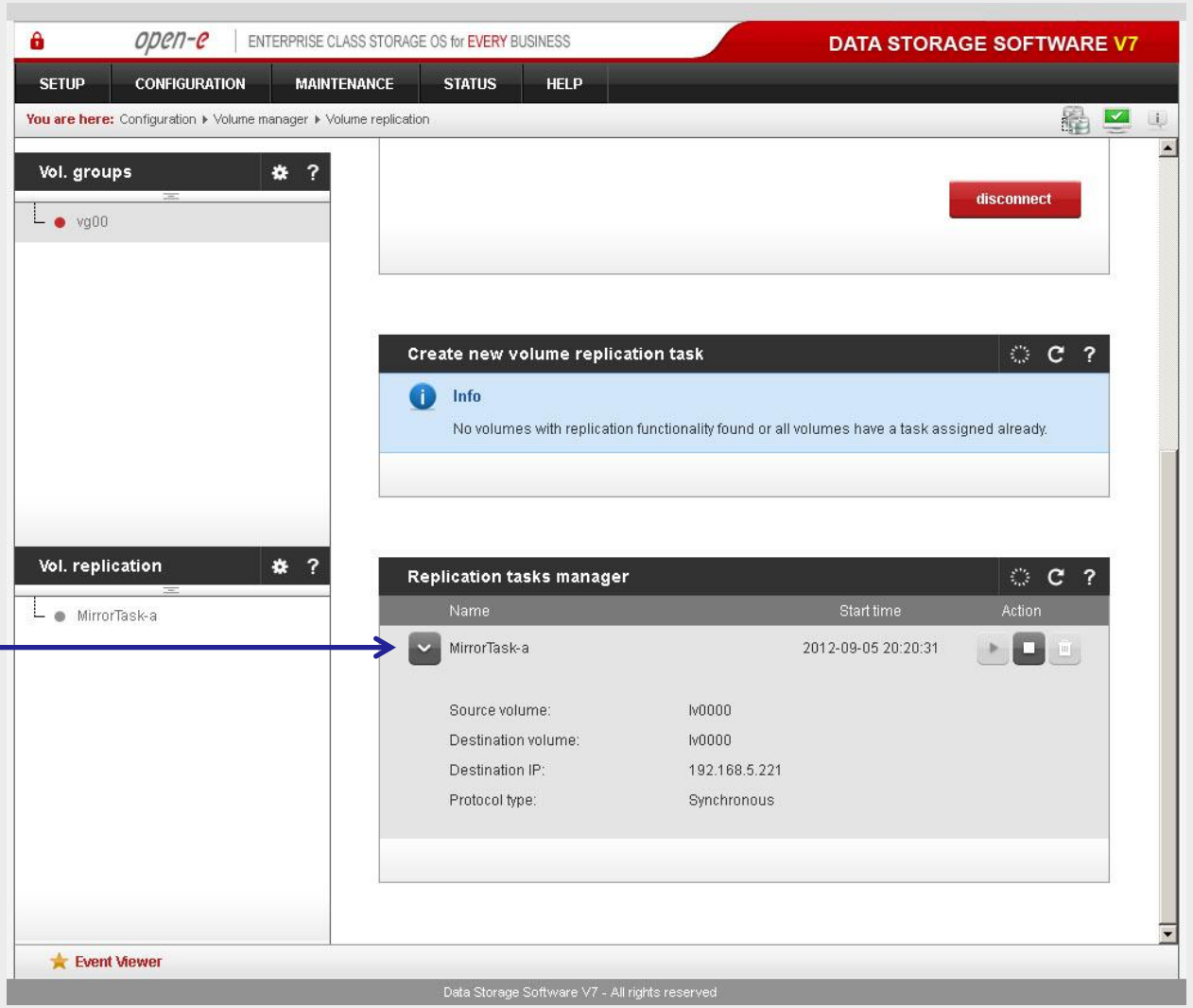
Data Server (DSS1)

node-a

IP Address:192.168.0.220

4. Configure the node-a

In the **Replication tasks manager** function, information is available on currently running replication tasks. When a task is started, a date and time will appear.



Open-E DSS V7 Active-Active iSCSI Failover

Data Server (DSS1)

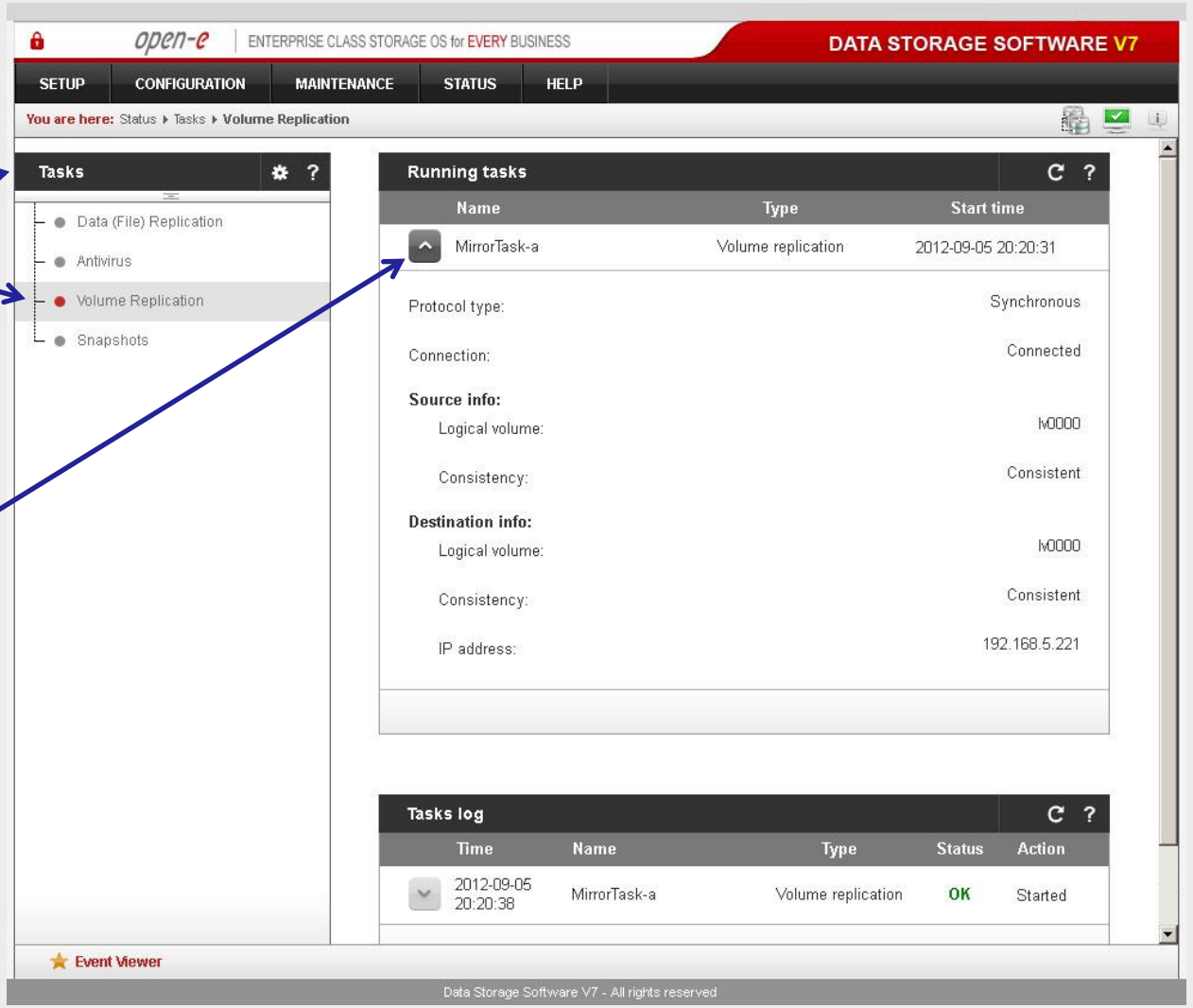
node-a

IP Address:192.168.0.220

4. Configure the node-a

You can check the status of Volume Replication anytime in **STATUS** -> **„Tasks"** -> **„Volume Replication"** menu.

Click on the button, located next to a task name (in this case **MirrorTask-a**) to display detailed information on the current replication task.



NOTE:

Please allow the replication task to complete (similar to above with status being „Consistent") before writing to the iSCSI Logical Volume.

Open-E DSS V7 Active-Active iSCSI Failover

Data Server (DSS2)

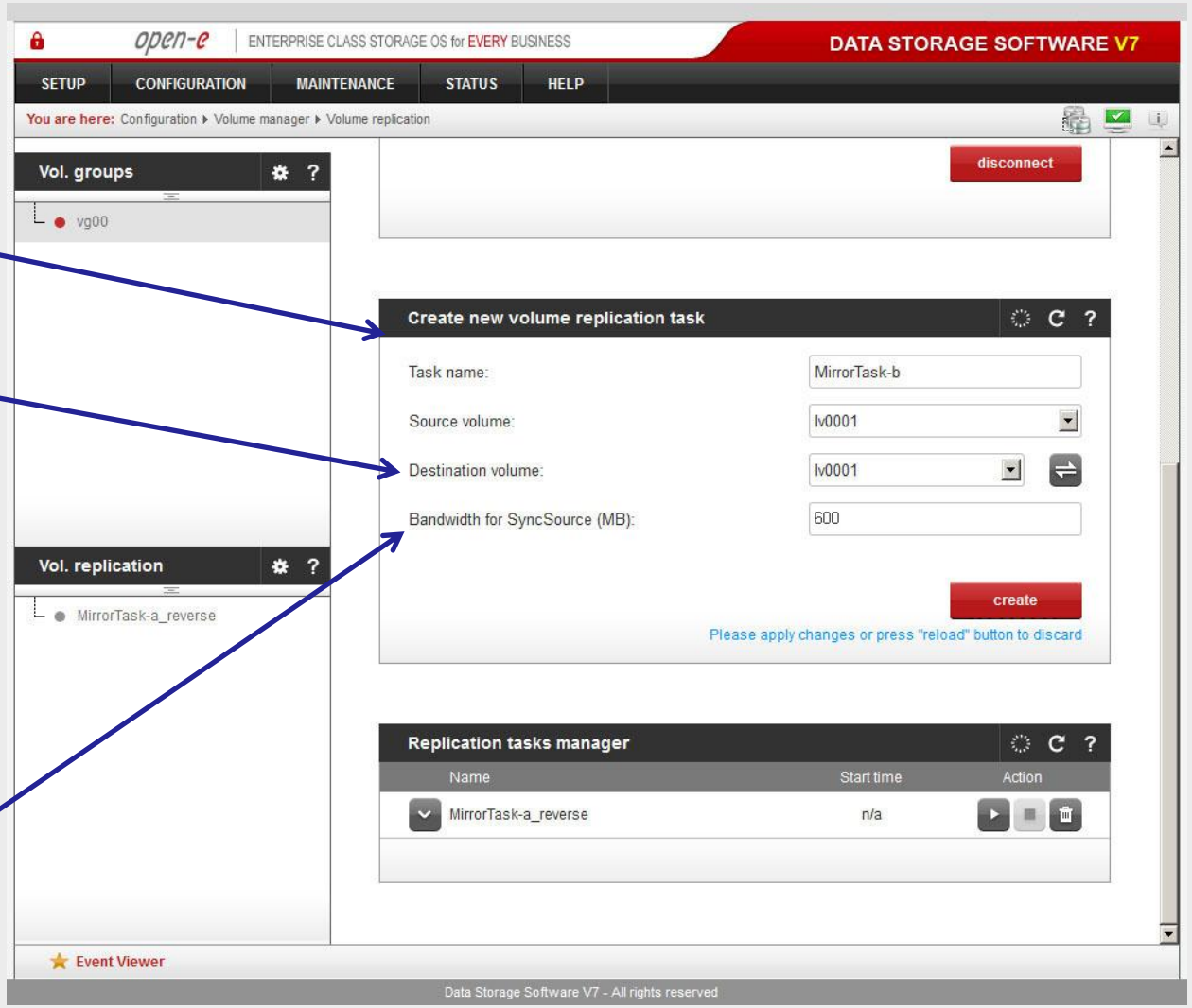
node-b

IP Address:192.168.0.221

3. Configure the node-b

Next, go to the node-b.
Within **Create new volume replication task,** enter the task name in the **Task name** field, then click on the ⇌ button.
In the **Destination volume** field, select the appropriate volume (in this example**, lv0001**).

As in the node-a, in the **Bandwidth for SyncSource (MB)** field you must change the value of a minimum of 500 MB. In our example 600 MB is used. Next click the create button.



Open-E DSS V7 Active-Active iSCSI Failover

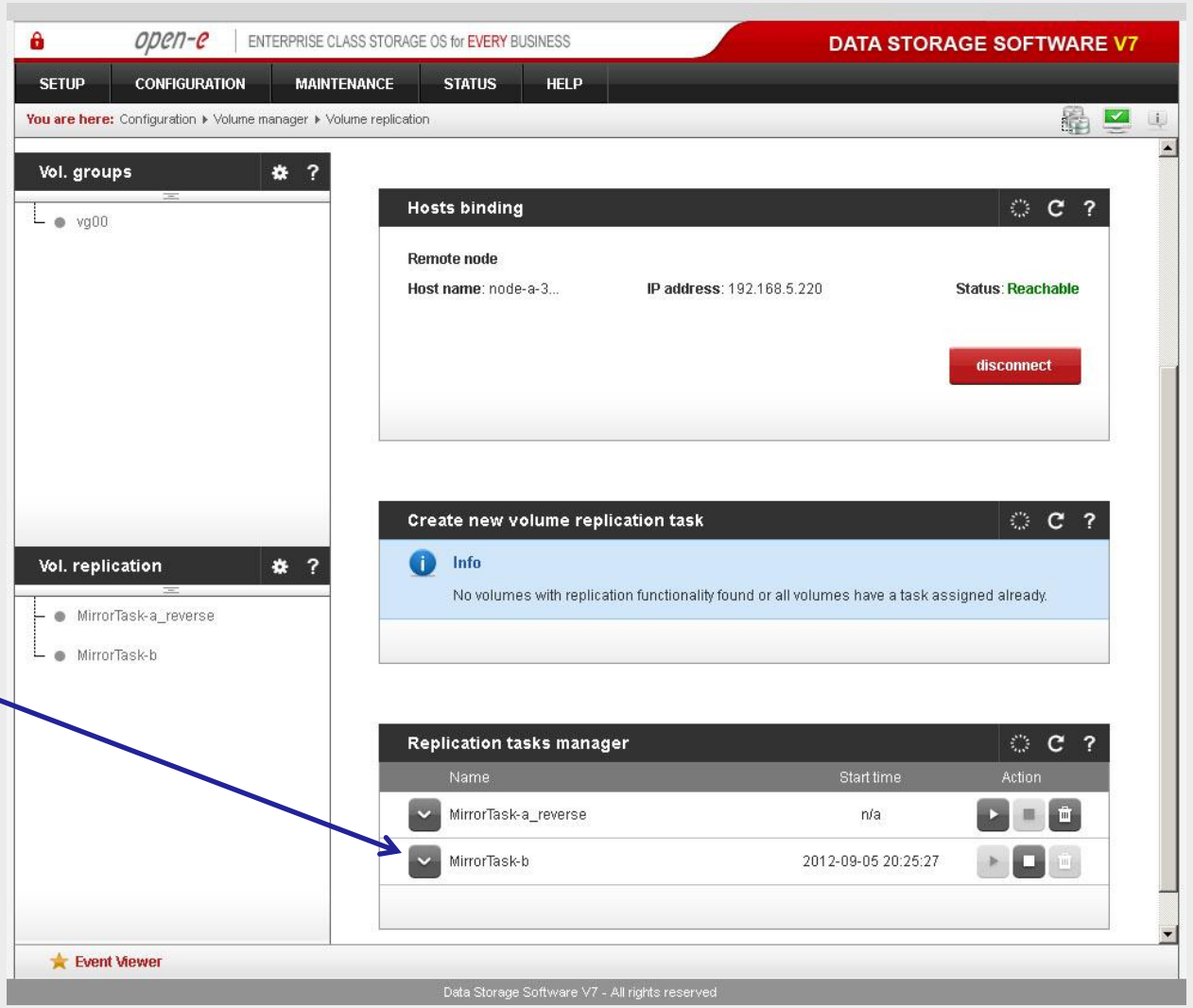
Data Server (DSS2)

node-b

IP Address:192.168.0.221

3. Configure the node-b

In the **Replication tasks manager** function, click the corresponding „**play**" button to start the Replication task on the node-b: **MirrorTask-b**.
In this box you can find information about currently running replication tasks.
When a task is started a date and time will appear.



Open-E DSS V7 Active-Active iSCSI Failover

Data Server (DSS2)

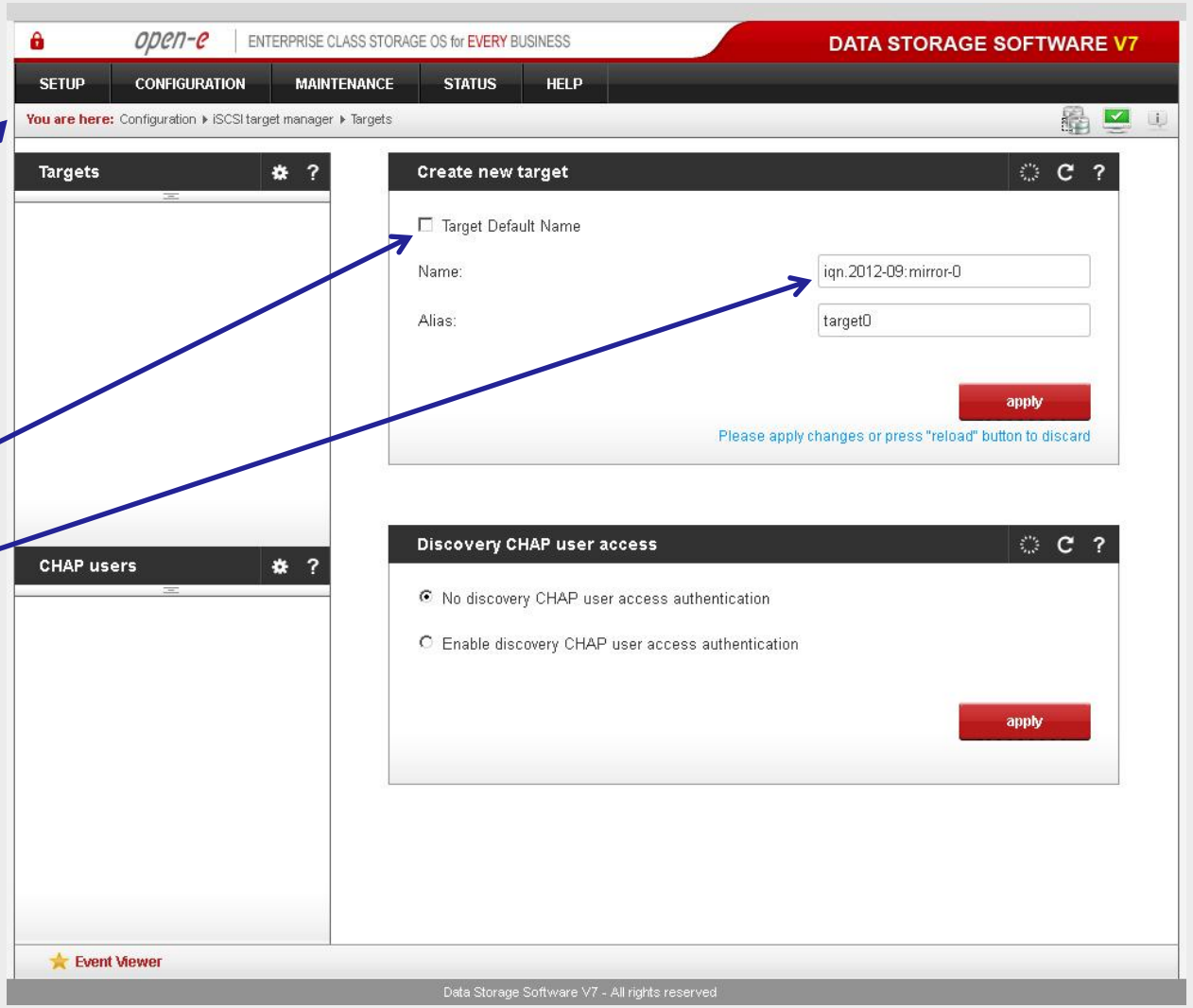
node-b

IP Address:192.168.0.221

5. Create new target on the node-b

Choose **CONFIGURATION**, **„iSCSI target manager"** and **„Targets"** from the top menu.

In the **Create new target** function, uncheck the box **Target Default Name**.
In the **Name** field, enter a name for the new target and click apply to confirm.



iSCSI targets

NOTE:
Both systems must have the same Target name.

Open-E DSS V7 Active-Active iSCSI Failover

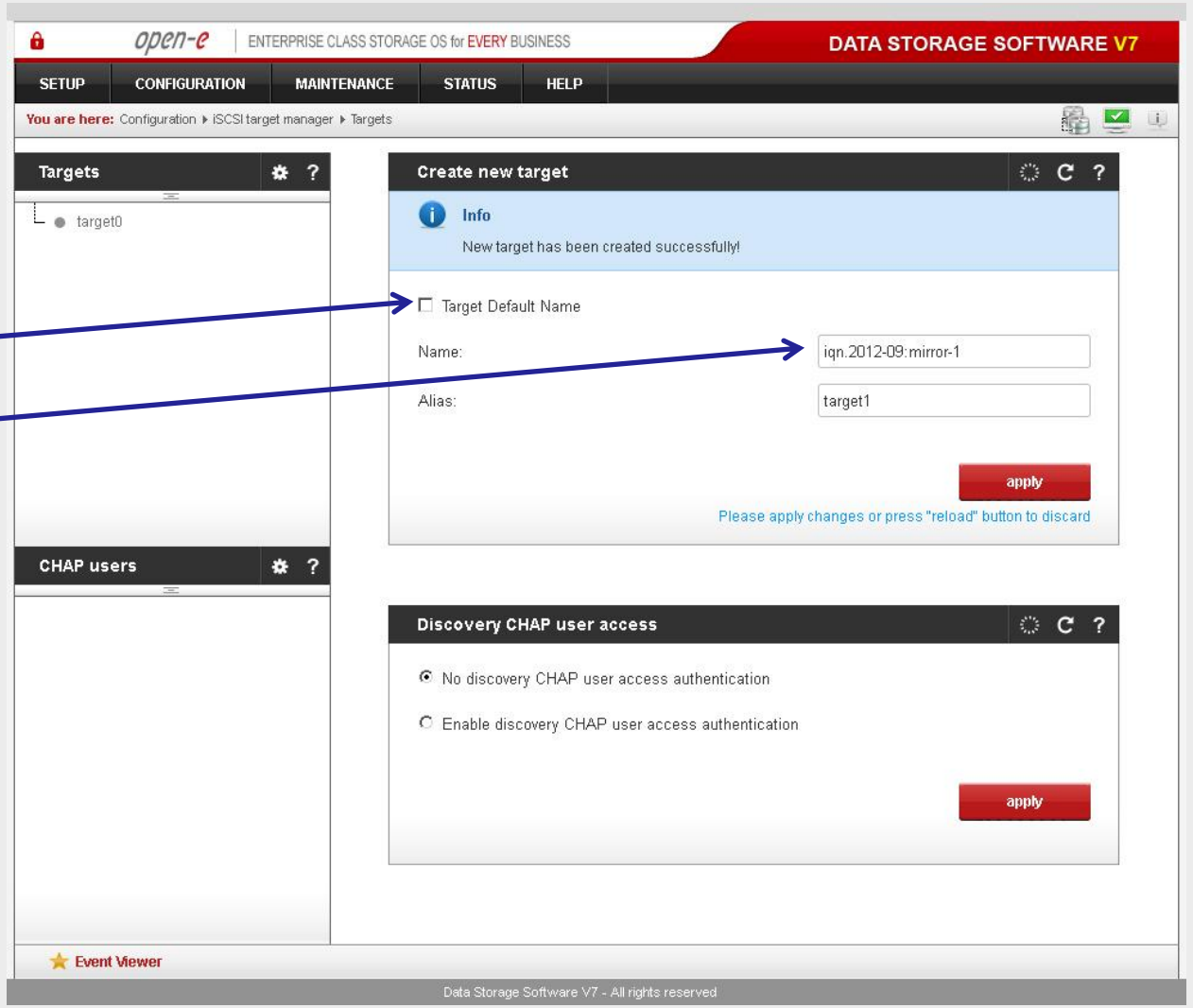
Data Server (DSS2)

node-b

IP Address:192.168.0.221

5. Create new target on the node-b

Next, you must set the 2nd target. Within the **Create new target** function, uncheck the box **Target Default Name**.
In the **Name** field, enter a name for the 2nd new target and click apply to confirm.



iSCSI targets

NOTE:
Both systems must have the same Target name.

Open-E DSS V7 Active-Active iSCSI Failover

Data Server (DSS2)

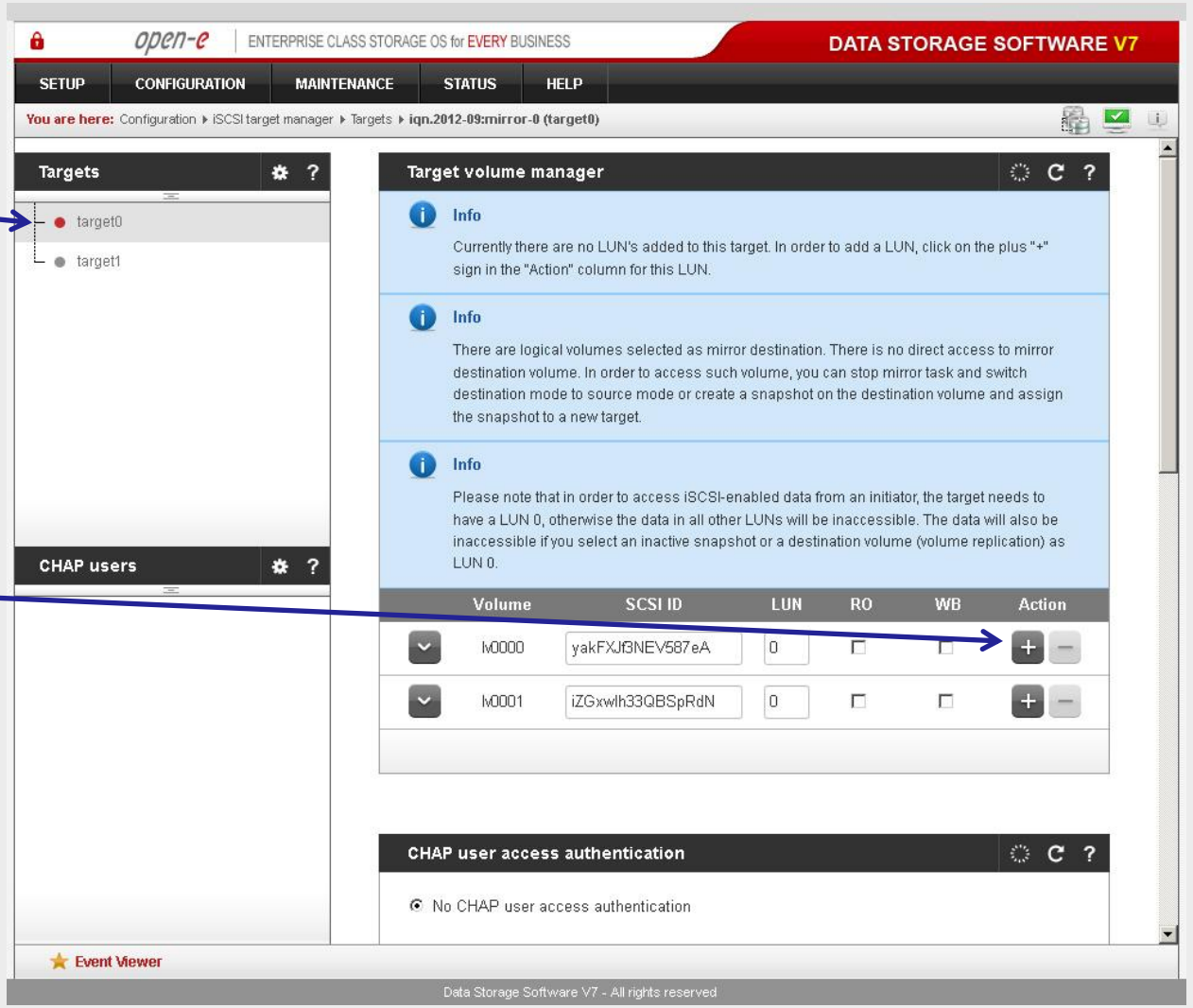
node-b

IP Address:192.168.0.221

5. Create new target on the node-b

After that, select **target0** within the **Targets** field.

To assign appropriate volume to the target (**iqn.2012-09:mirror-0 -> lv0000**) and click the + button located under **Action.**



NOTE:

Volumes on both sides must have the same SCSI ID and LUN# for example: lv0000 SCSI ID on node-a = lv0000 on node-b.

WARNING:

Please do not switch on the write back (WB) cache !

Open-E DSS V7 Active-Active iSCSI Failover

Data Server (DSS2)

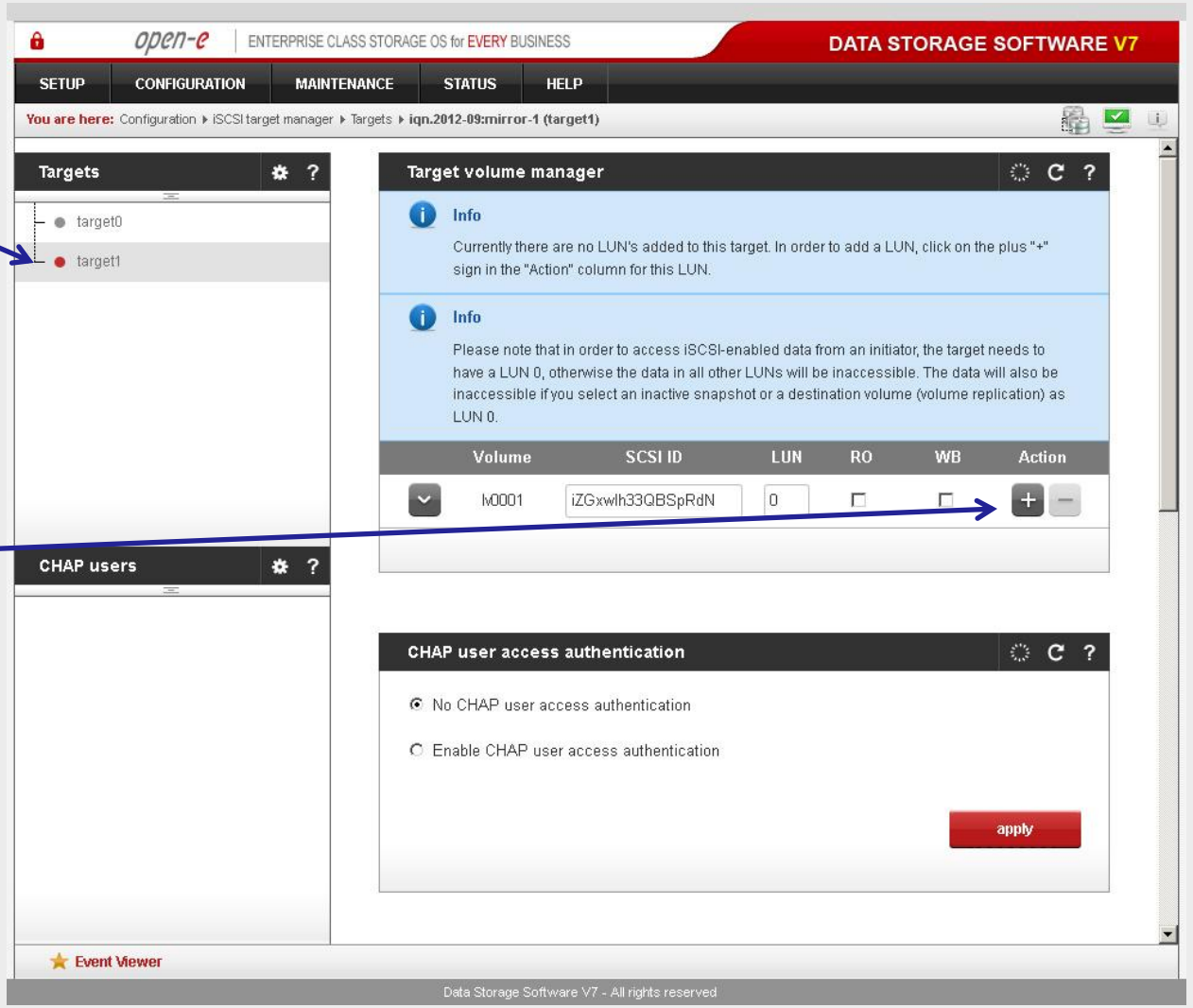
node-b

IP Address:192.168.0.221

5. Create new target on the node-b

Next, select **target1** within the **Targets** field.

To assign appropriate volume to the target (**iqn.2012-09:mirror-1-> lv0001**) and click the + button located under **Action.**



NOTE:

Both systems must have the same SCSI ID and LUN#

WARNING:

Please do not switch on the write back (WB) cache !

Open-E DSS V7 Active-Active iSCSI Failover

Data Server (DSS1)

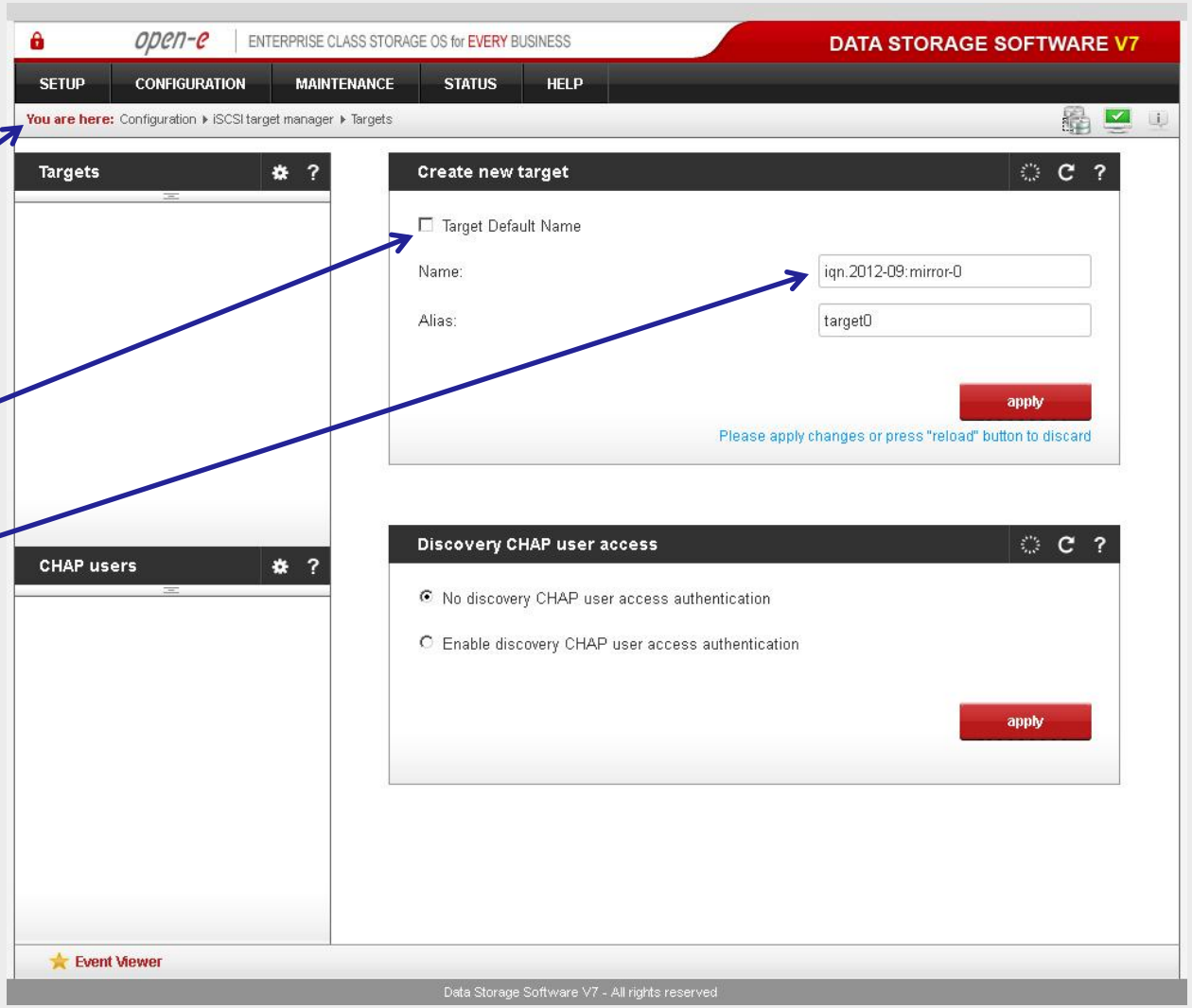
node-a

IP Address:192.168.0.220

5. Create new target on the node-a

On the node-a, choose **CONFIGURATION**, **„iSCSI target manager"** and **„Targets"** from the top menu.

Within the **Create new target** function, uncheck the box **Target Default Name.**
In the **Name** field, enter a name for the new target and click **apply** to confirm.



iSCSI targets

NOTE:
Both systems must have the same Target name.

Open-E DSS V7 Active-Active iSCSI Failover

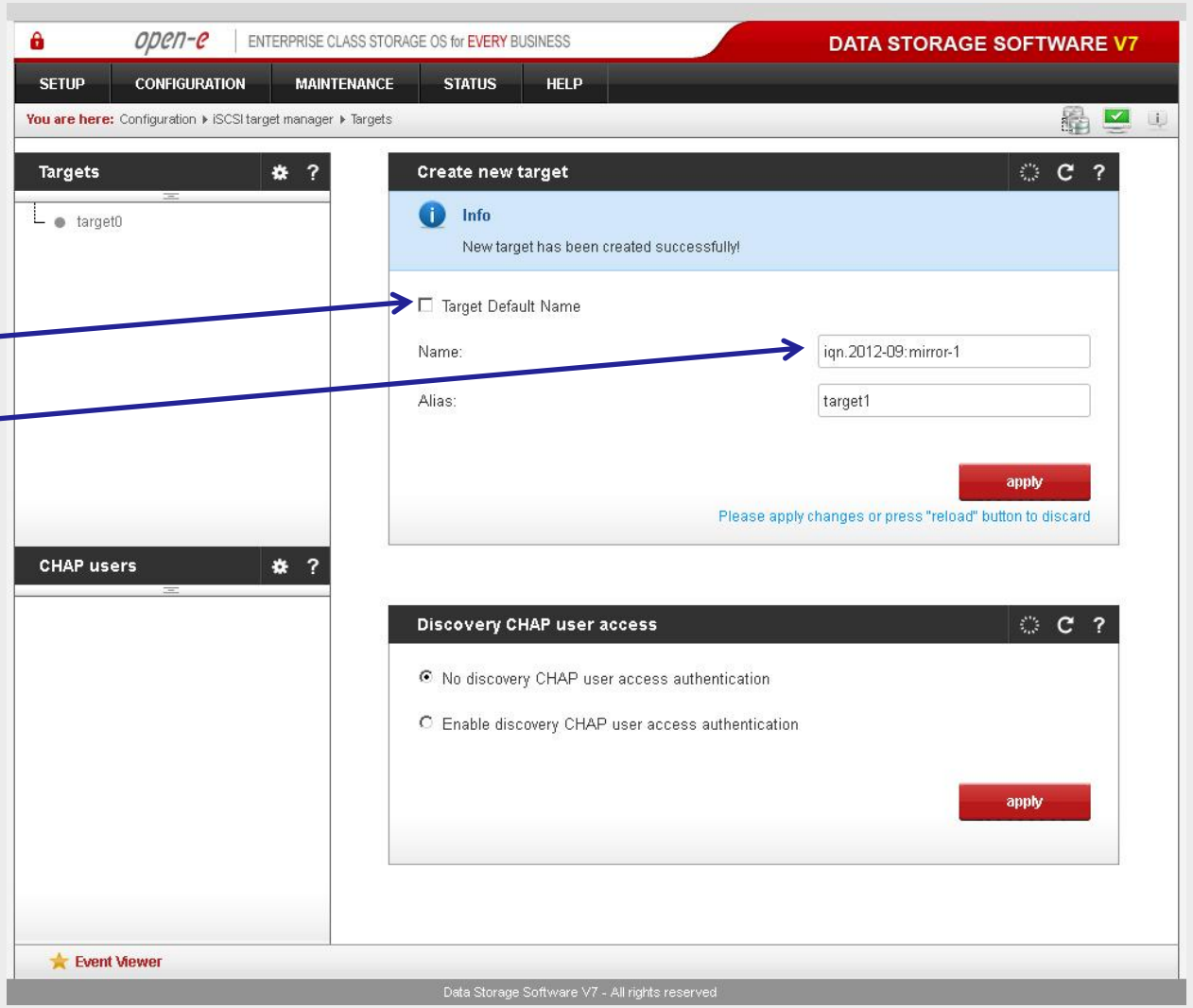
Data Server (DSS1)

node-a

IP Address:192.168.0.220

5. Create new target on the node-a

Next, you must set the 2nd target.
In the **Create new target** function, uncheck the box **Target Default Name**.
In the Name field, enter a name for the 2nd new target and click apply to confirm.



iSCSI targets

NOTE:
Both systems must have the same Target name.

Open-E DSS V7 Active-Active iSCSI Failover

Data Server (DSS1)

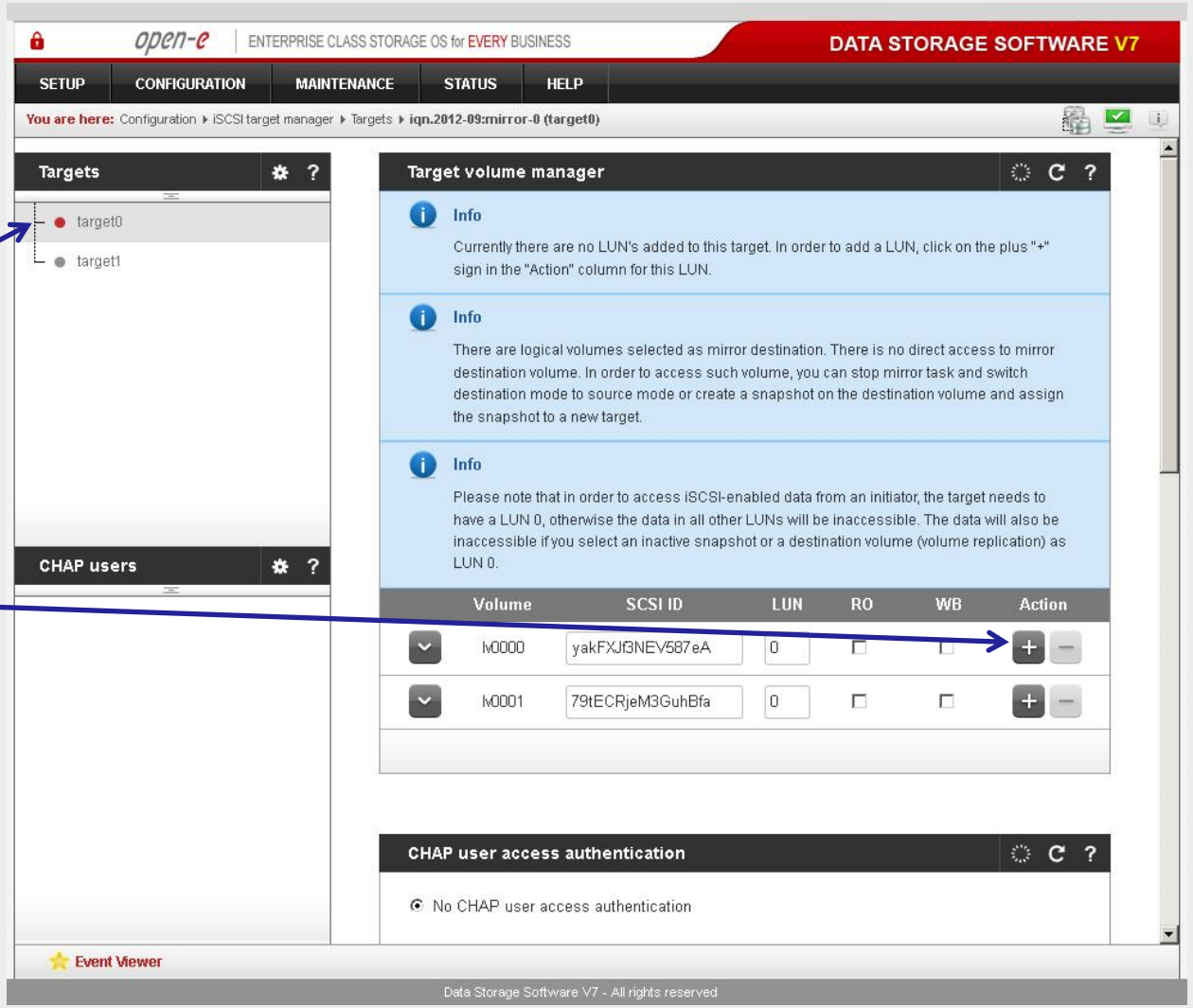
node-a

IP Address:192.168.0.220

5. Create new target on the node-a

Select the **target0** within the **Targets** field.

To assign appropriate volume to the target (**iqn.2012-09:mirror-0 -> lv0000**) and click the + button located under **Action.**



NOTE:

Before clicking the + button again, please copy & paste the SCSI ID and LUN# from the node-b.

WARNING:

Please do not switch on the write back cache (WB) !

Open-E DSS V7 Active-Active iSCSI Failover

Data Server (DSS1)

node-a

IP Address:192.168.0.220

5. Create new target on the node-a

Select the **target1** within the **Targets** field.

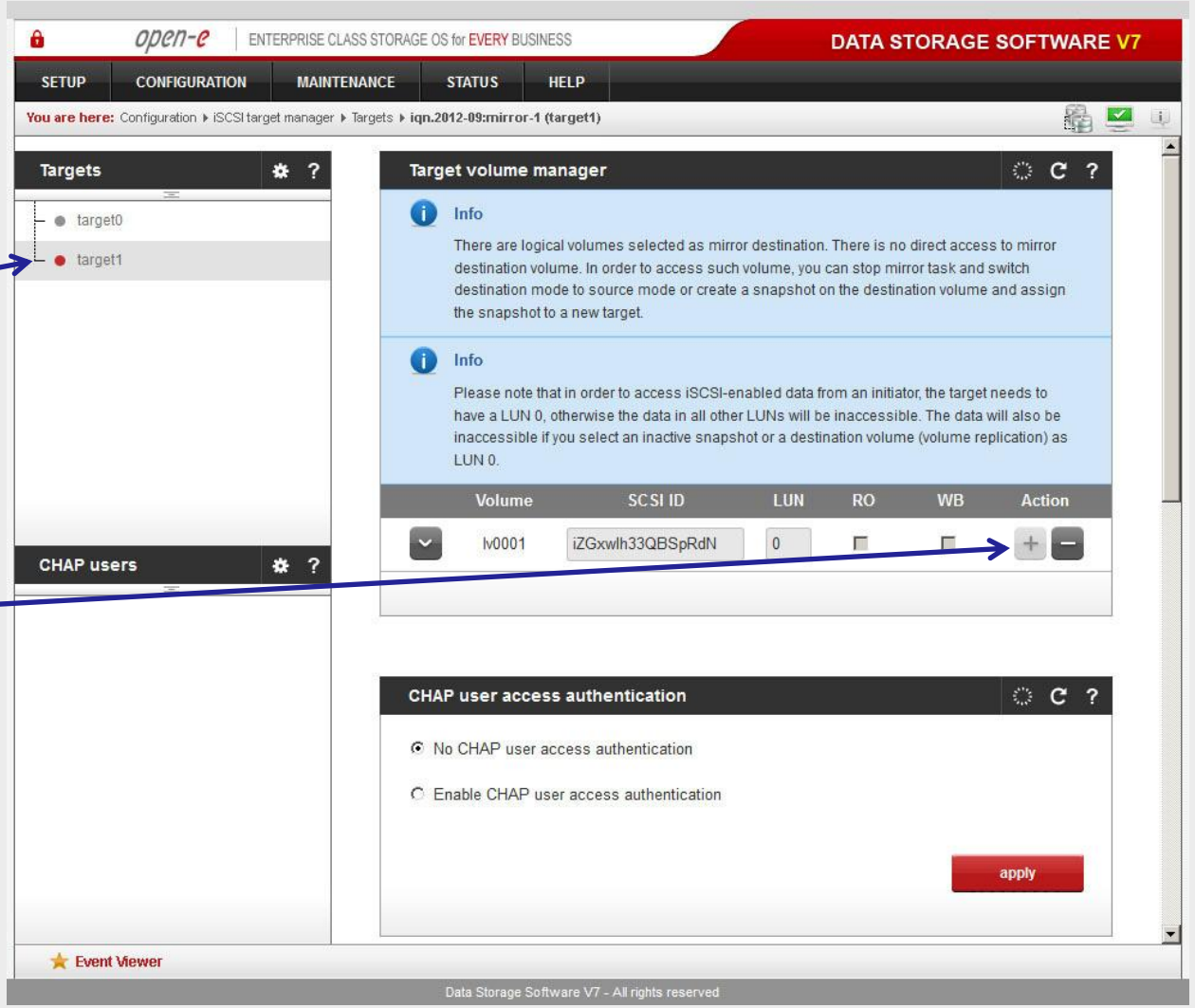
To assign appropriate volume to the target (**iqn.2012-09:mirror-1-> lv0001**) and click the + button located under **Action.**

NOTE:

Before clicking the + button again, please copy & paste the SCSI ID and LUN# from the node-b.

WARNING:

Please do not switch on the write back cache (WB) !



Open-E DSS V7 Active-Active iSCSI Failover

Data Server (DSS1)

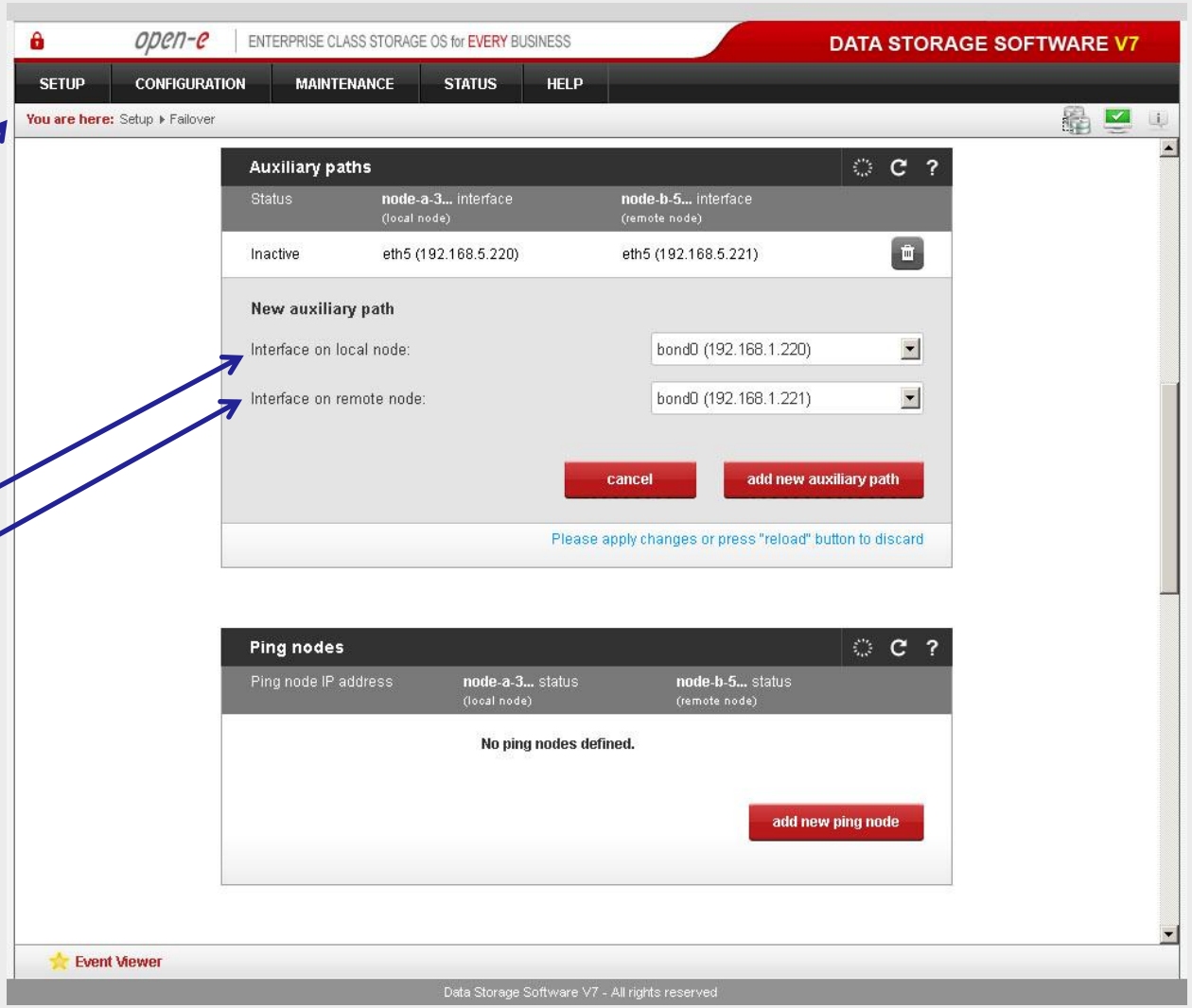
node-a

IP Address:192.168.0.220

6. Configure Failover

On the node-a, go to **SETUP** and select **„Failover".**

In the **Auxiliary paths** function, select the 1st **New auxiliary path** on the local and remote node and click the **add new auxiliary path** button.



Open-E DSS V7 Active-Active iSCSI Failover

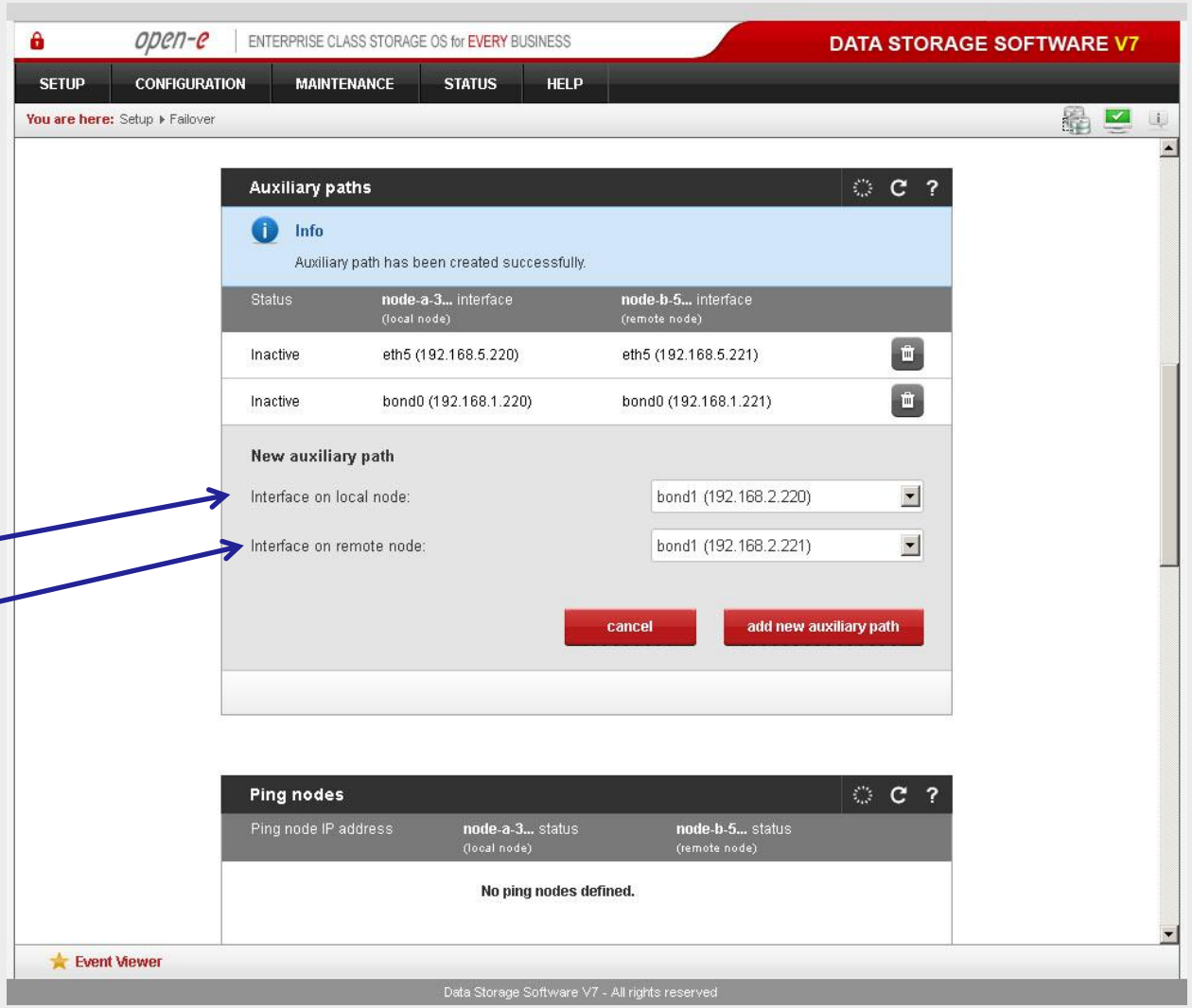
Data Server (DSS1)

node-a

IP Address:192.168.0.220

6. Configure Failover

In the **Auxiliary paths** function, select the 2nd **New auxiliary path** on the local and remote node and click the add new auxiliary path button.



Open-E DSS V7 Active-Active iSCSI Failover

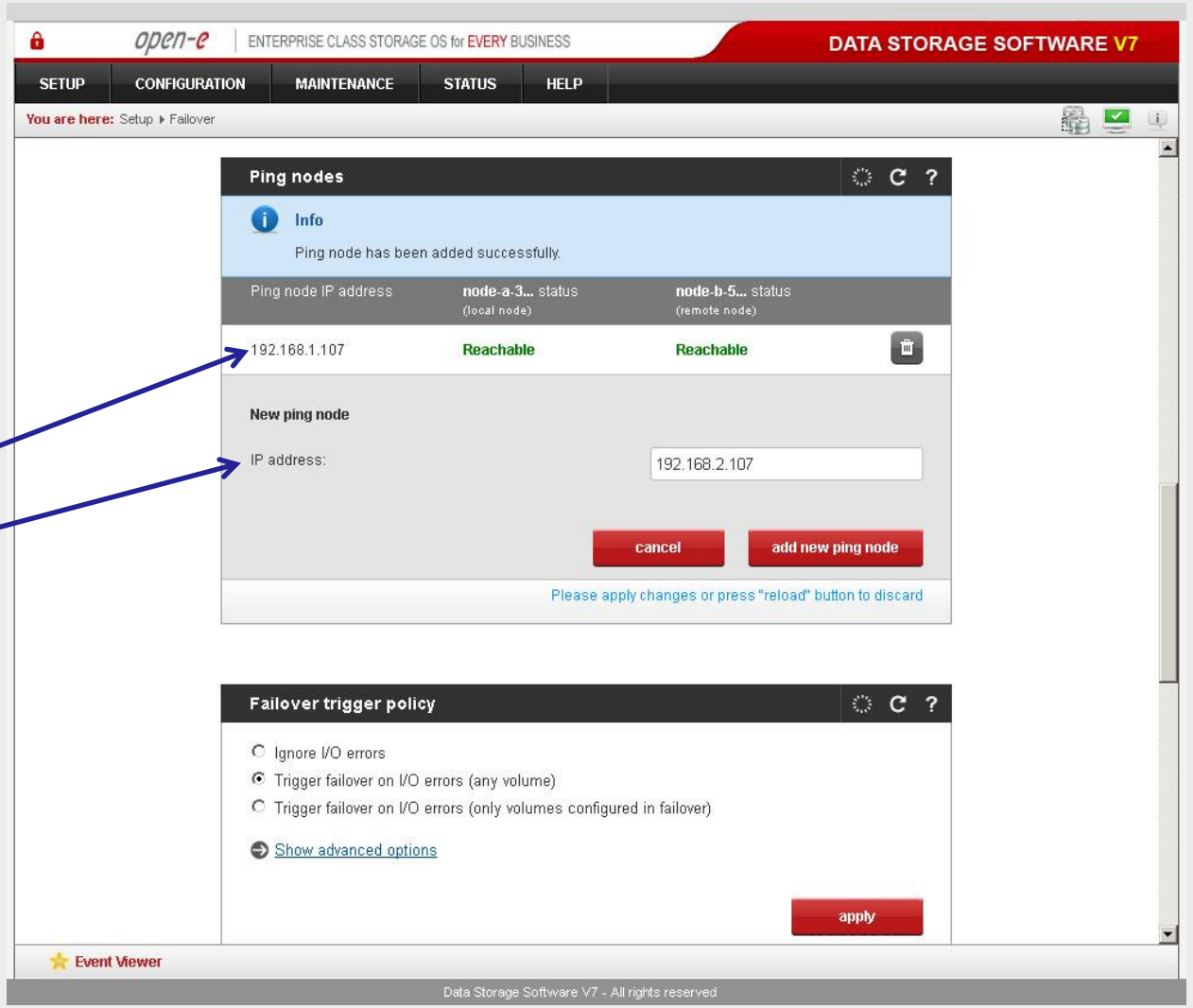
Data Server (DSS1)

node-a

IP Address:192.168.0.220

6. Configure Failover

In the **Ping nodes** function, enter two ping nodes.
In the **IP address** field enter IP address and click the **add new ping node** button (according to the configuration in the third slide).
In this example, IP address of the first ping node is: 192.168.1.107 and the second ping node: 192.168.2.107



Open-E DSS V7 Active-Active iSCSI Failover

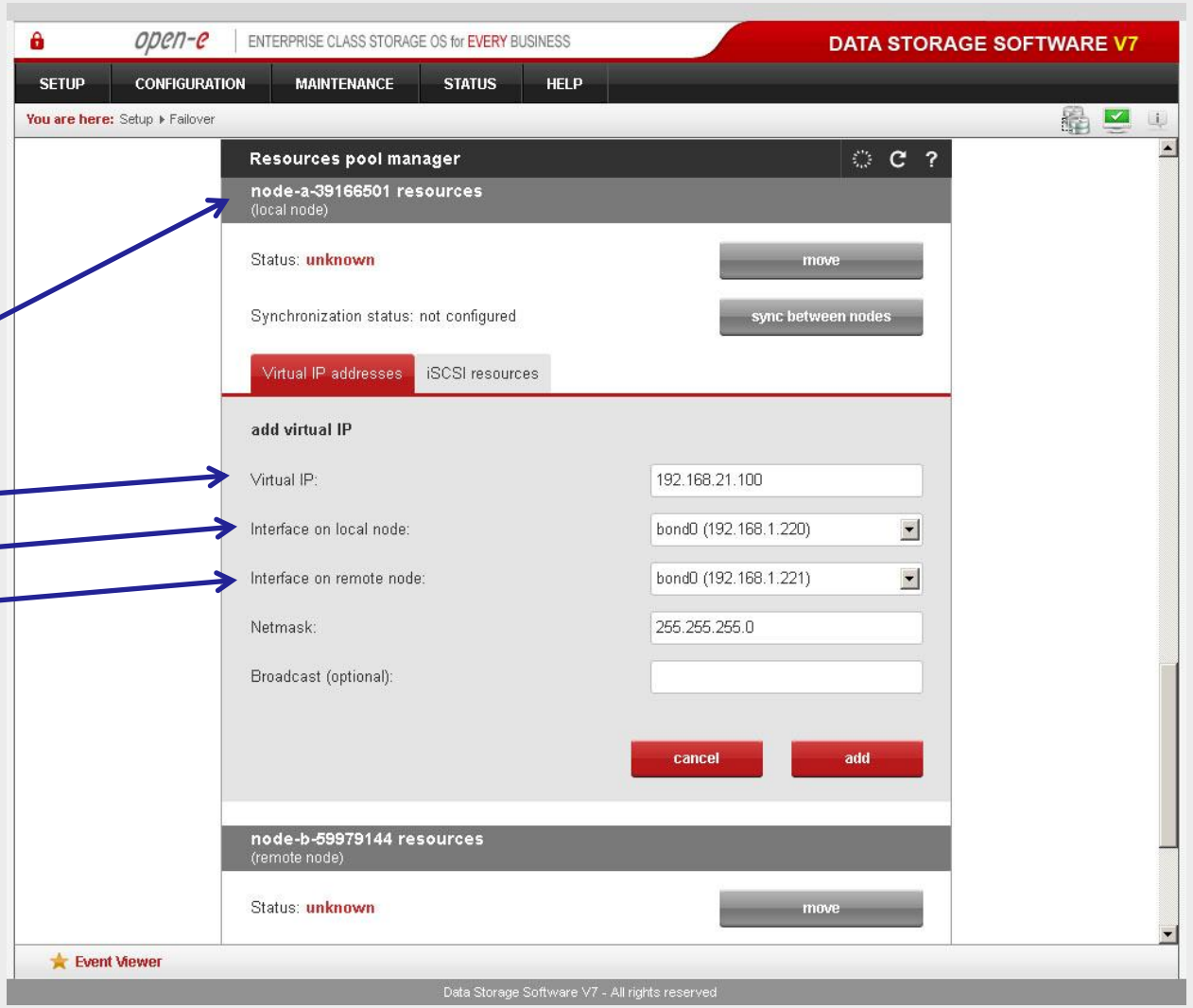
Data Server (DSS1)

node-a

IP Address:192.168.0.220

6. Configure Failover

Next, go to the **Resources Pool Manager** function (on node-a resources) and click the add virtual IP button. After that, enter **Virtual IP,** (in this example 192.168.21.100 according to the configuration in the third slide) and select two appropriate interfaces on local and remote nodes. Then, click the add button.



Open-E DSS V7 Active-Active iSCSI Failover

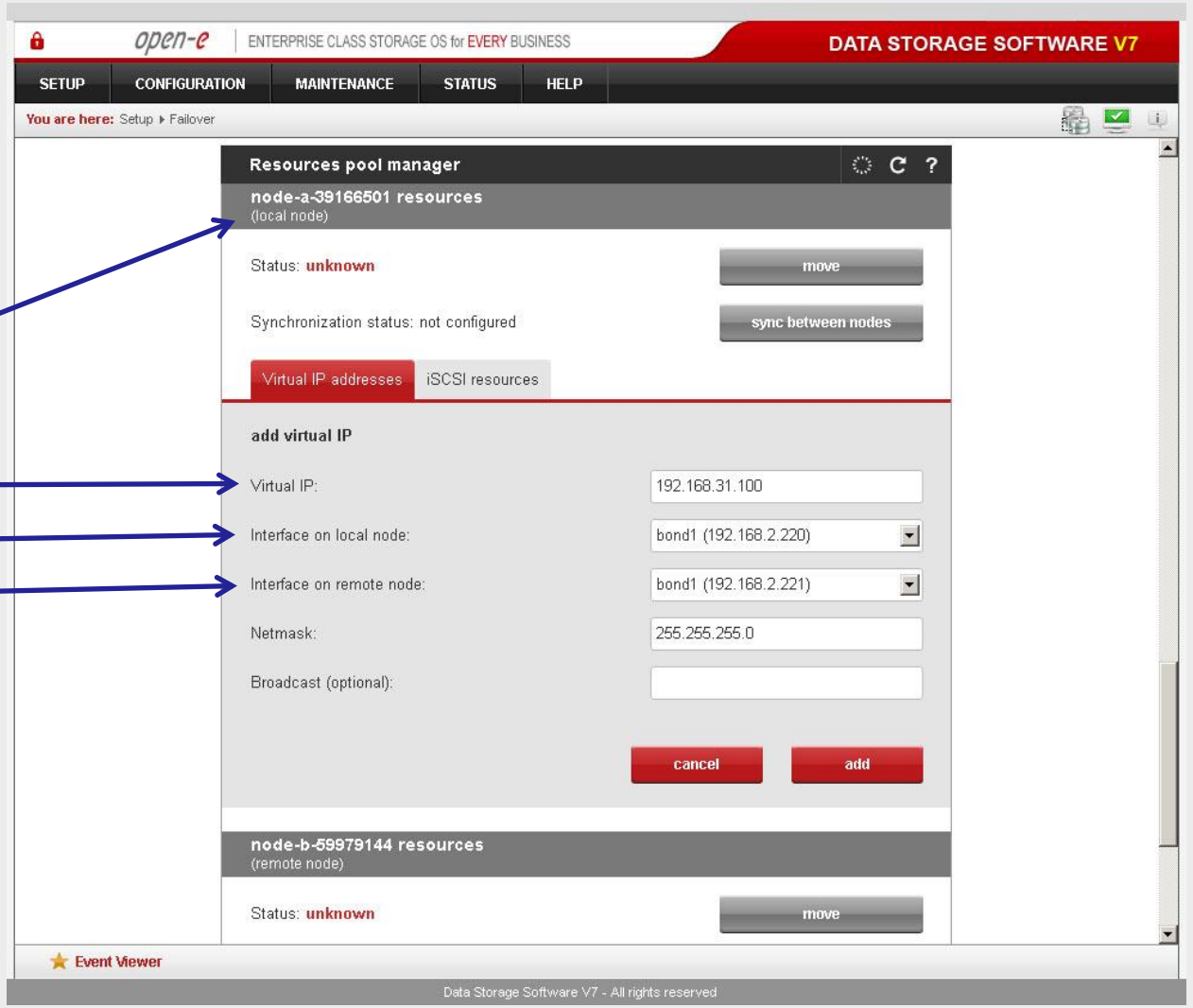
Data Server (DSS1)

node-a

IP Address:192.168.0.220

6. Configure Failover

Now, still on node-a resources (local node) enter the next Virtual IP address. Click **add virtual IP** enter **Virtual IP,** (in this example 192.168.31.100), and select two appropriate interfaces on the local and remote nodes. Then, click the **add** button.



Open-E DSS V7 Active-Active iSCSI Failover

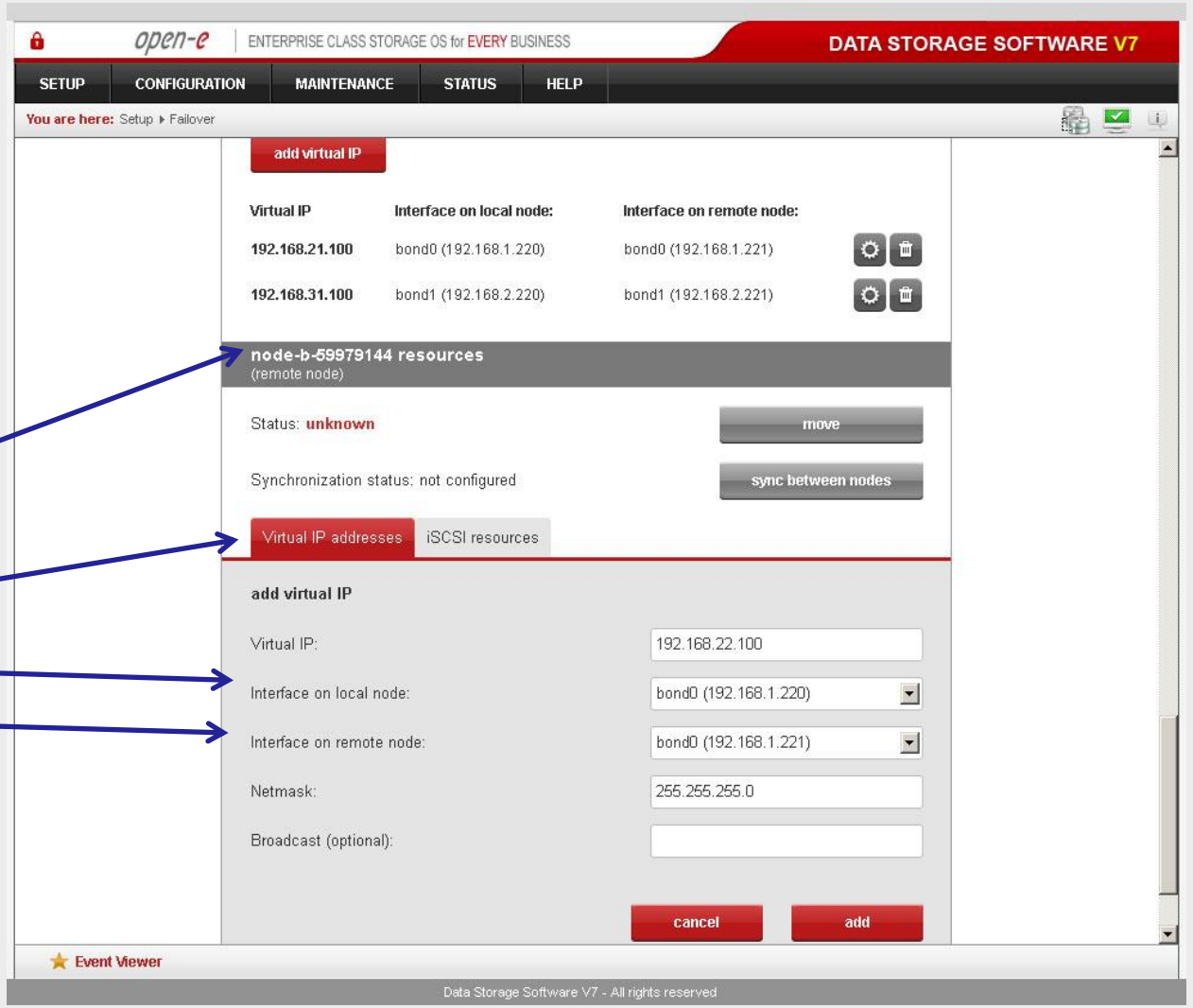
Data Server (DSS1)

node-a

IP Address:192.168.0.220

6. Configure Failover

Then, go to node-b resources and click the add virtual IP button again and enter the **Virtual IP (**In this example 192.168.22.100 according to the configuration in the third slide) and select two appropriate interfaces on the local and remote nodes. Then, click the add button.



Open-E DSS V7 Active-Active iSCSI Failover

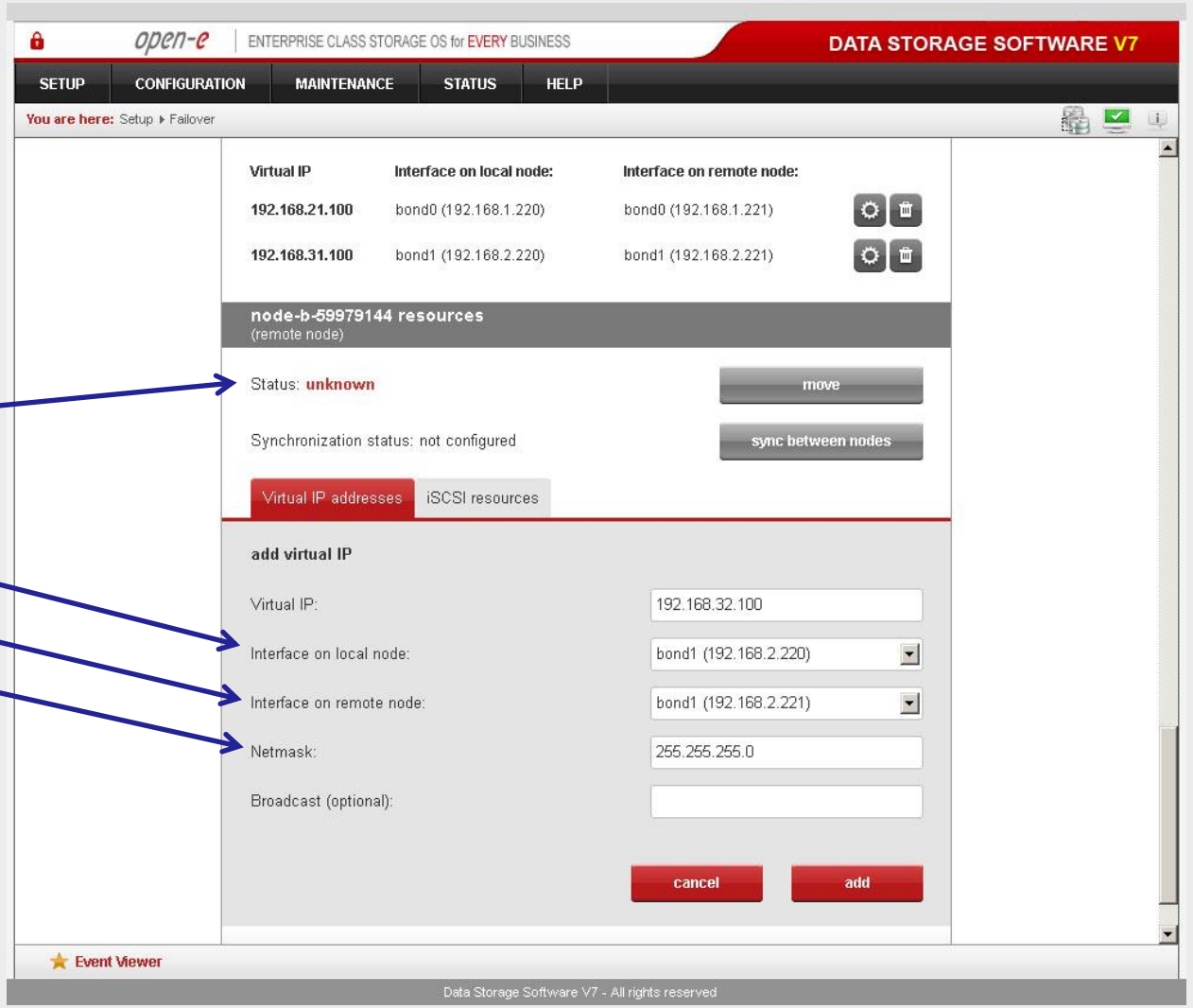
Data Server (DSS1)

node-a

IP Address:192.168.0.220

6. Configure Failover

Now, still on node-b resources, click the add virtual IP button and enter the next **Virtual IP,** (in this example 192.168.32.100, according to the configuration in the third slide) and select two appropriate interfaces on the local and remote nodes. Then, click the add button.



Open-E DSS V7 Active-Active iSCSI Failover

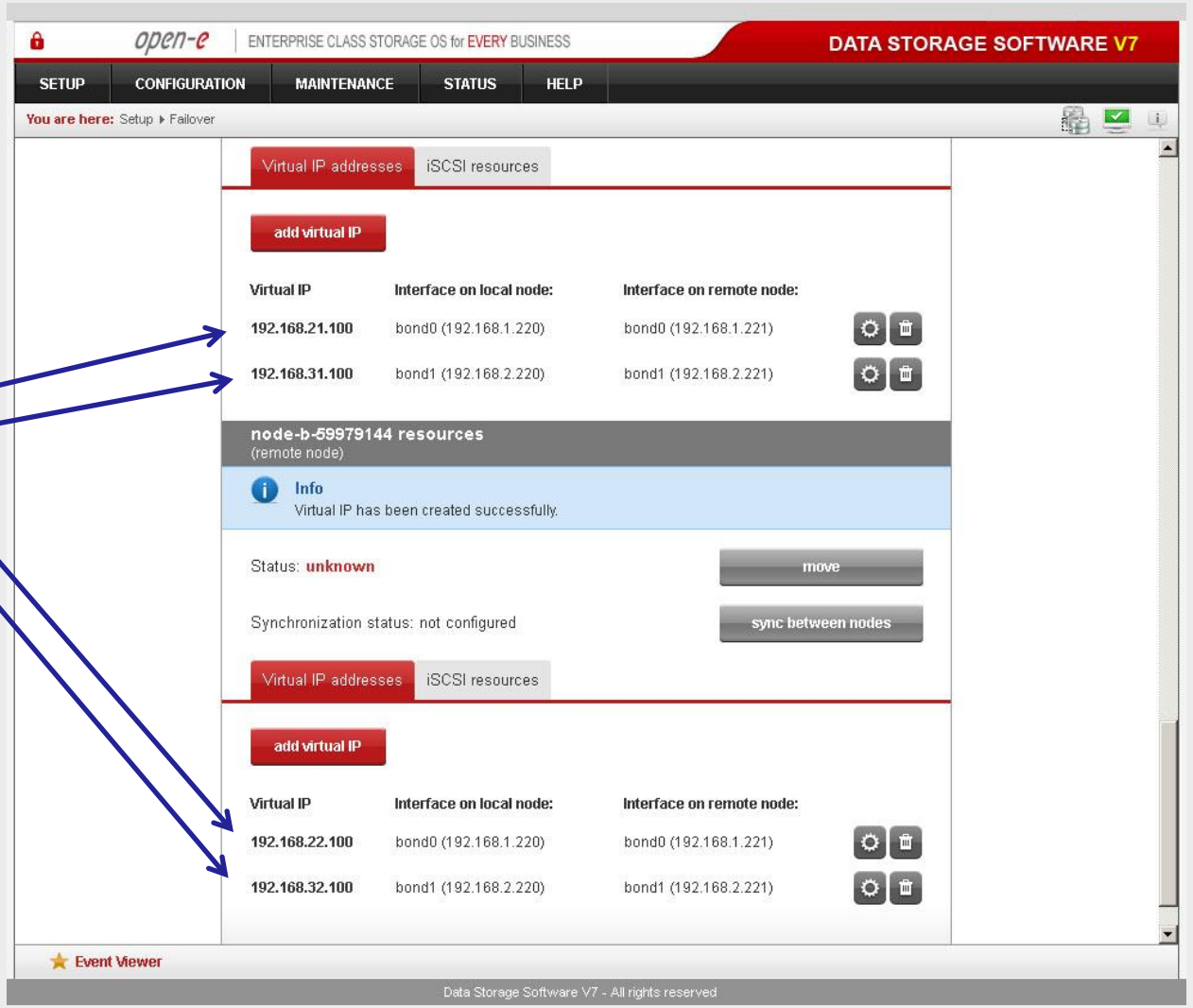
Data Server (DSS1)

node-a

IP Address:192.168.0.220

6. Configure Failover

Now you have 4 **Virtual IP** addresses configured on two interfaces.



Open-E DSS V7 Active-Active iSCSI Failover

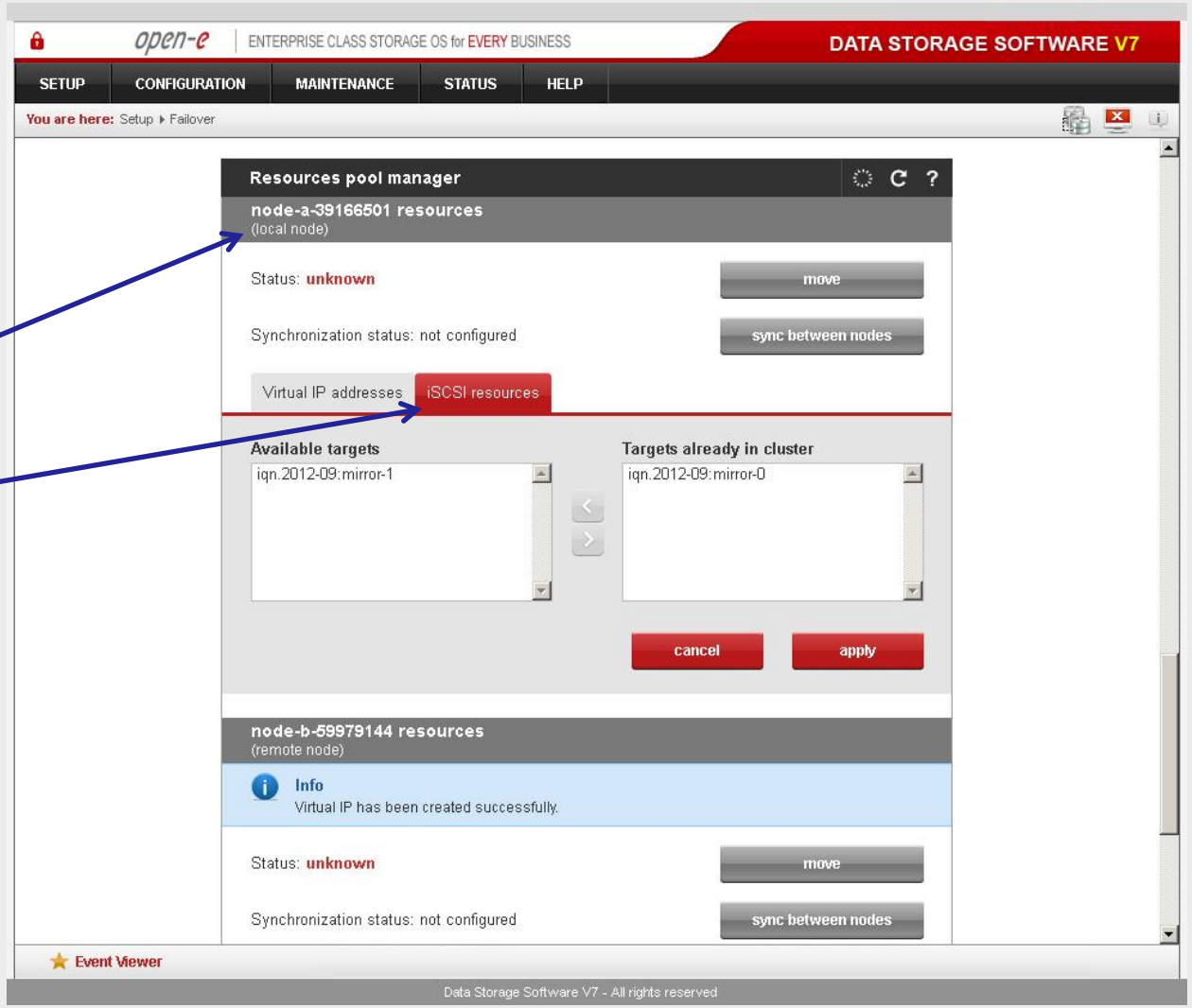
Data Server (DSS1)

node-a

IP Address:192.168.0.220

6. Configure Failover

When you are finished with setting the virtual IP, go to the **iSCSI resources** tab on the **local node** resources and click the **add or remove targets** button.
After moving the target **mirror-0** from **Available targets** to **Targets already in cluster**, click the **apply** button.



Open-E DSS V7 Active-Active iSCSI Failover

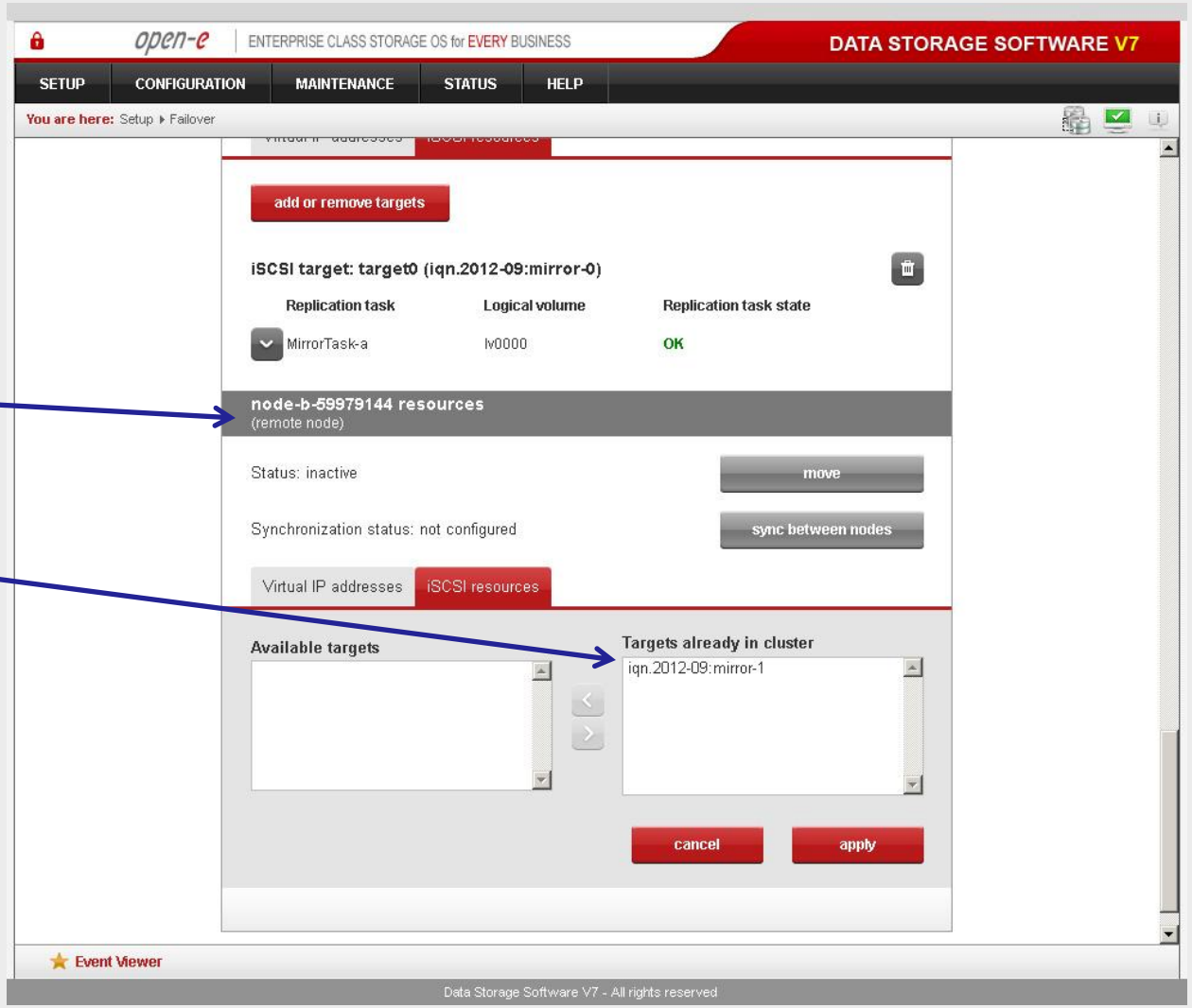
Data Server (DSS1)

node-a

IP Address:192.168.0.220

6. Configure Failover

Next, go to the **iSCSI resources** tab on the **remote node** resources and click the **add or remove targets** button.
After moving the target **mirror-1** from **Available targets** to **Targets already in cluster** , click the **apply** button.



Open-E DSS V7 Active-Active iSCSI Failover

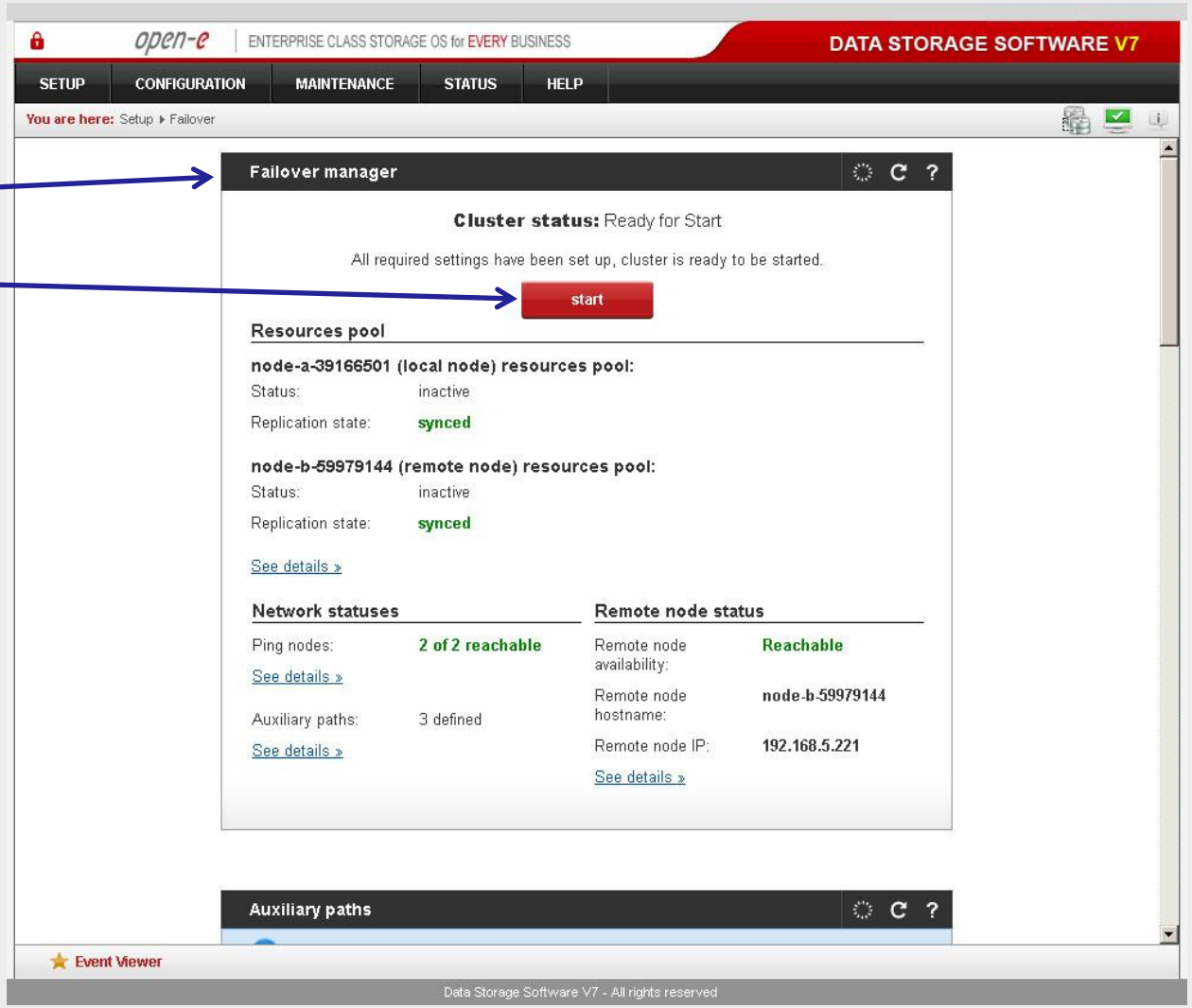
Data Server (DSS1)

node-a

IP Address:192.168.0.220

6. Configure Failover

After that, scroll to the top of the **Failover manager** function.
At this point, both nodes are ready to start the Failover.
In order to run the Failover service, click the **start** button and confirm this action by clicking the **start** button again.



NOTE:
If the start button is grayed out, the setup has not been completed.

Open-E DSS V7 Active-Active iSCSI Failover

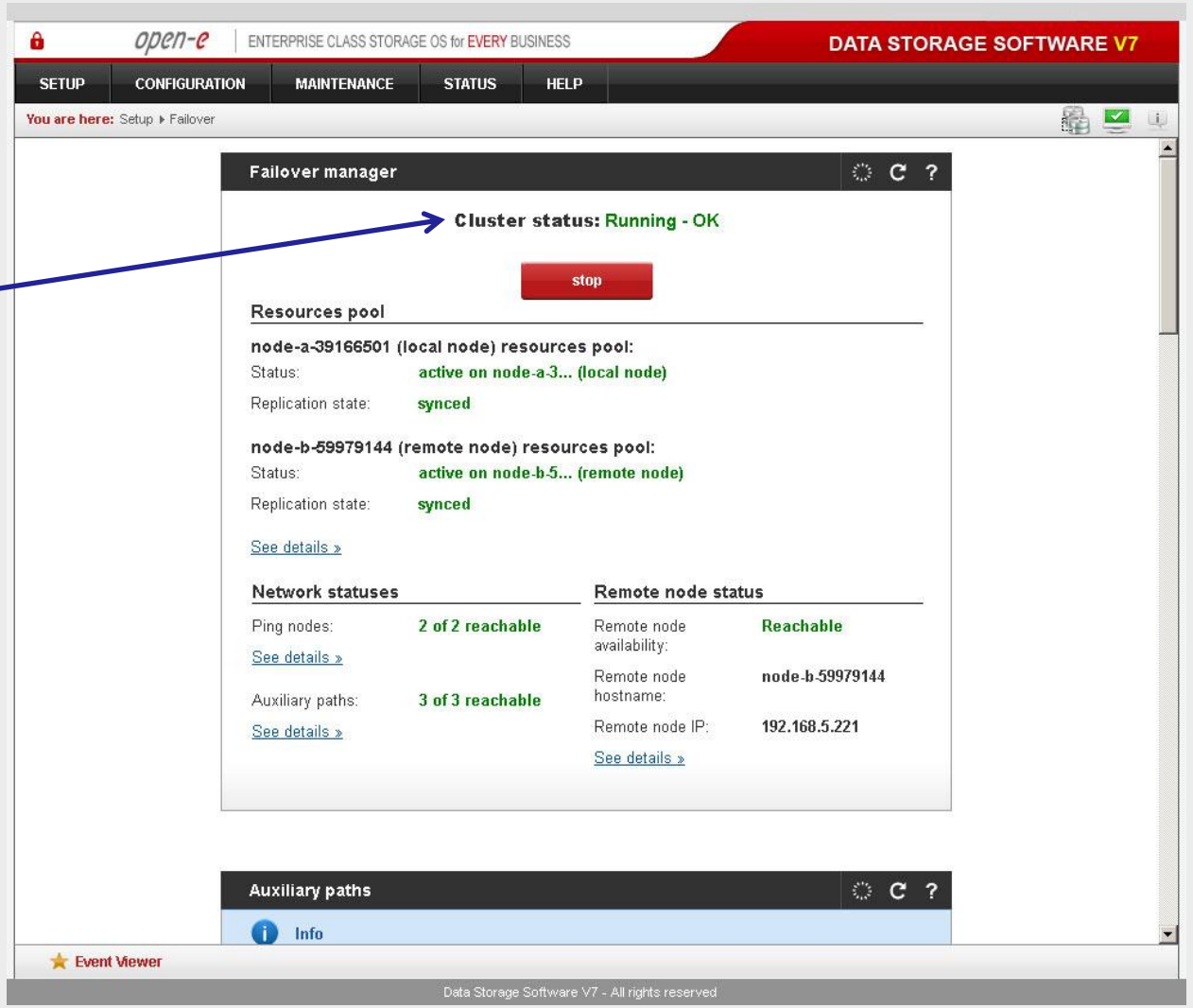
Data Server (DSS1)

node-a

IP Address:192.168.0.220

7. Start Failover Service

After clicking the start button, configuration of both nodes is complete.



NOTE:

You can now connect with iSCSI Initiators. The first storage client, in order to connect to target0 please setup multipath with following IP on the initiator side: 192.168.21.101 and 192.168.31.101. In order to connect to target1 please setup multipath with following IP on the initiator side: 192.168.22.101 and 192.168.32.101.

For the next storage client please setup multipath accordingly: for access to target: 192.168.21.102, 192.168.31.102 and for access to target1: 192.168.22.102, 192.168.32.102.

Open-E DSS V7 Active-Active iSCSI Failover

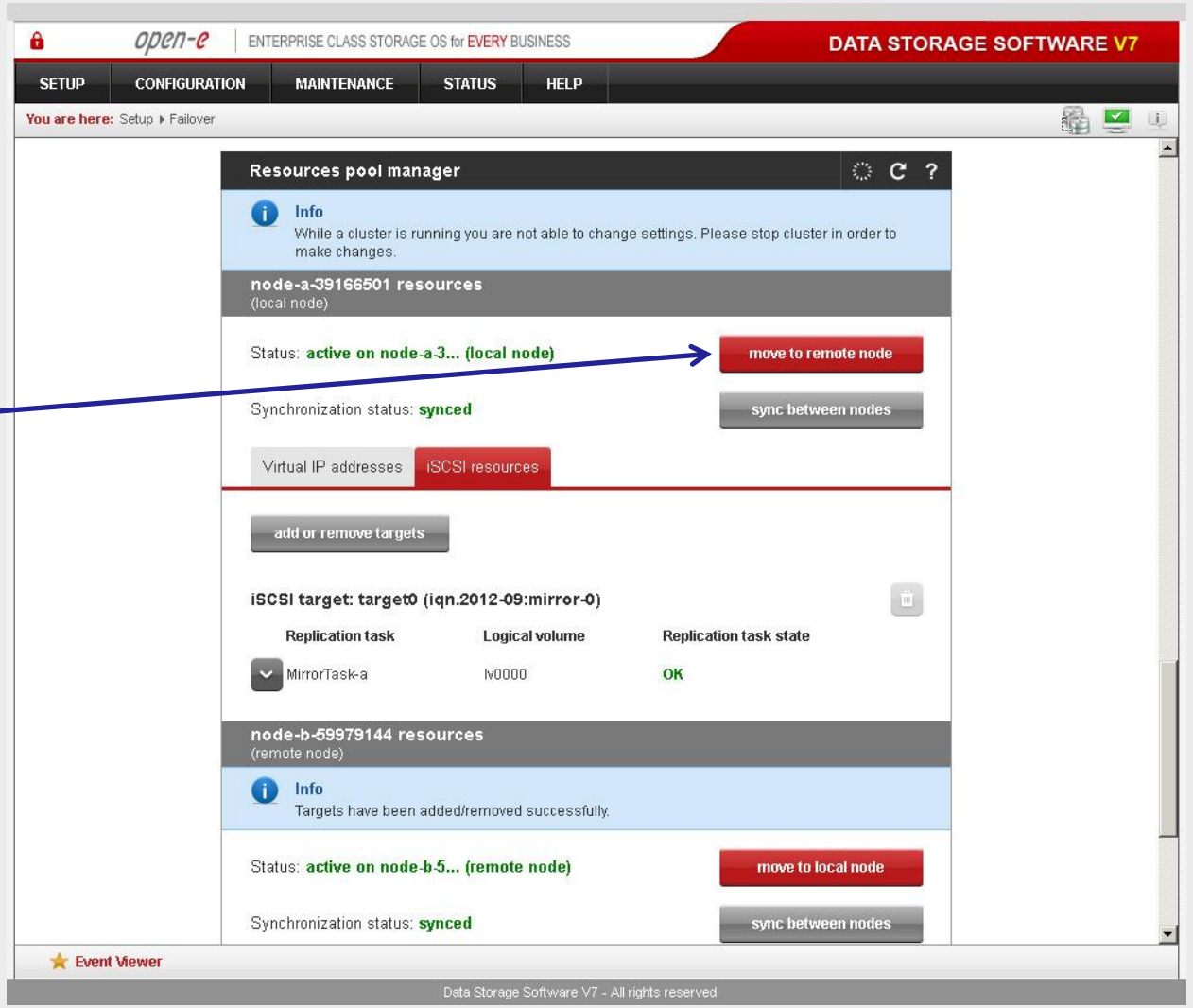
Data Server (DSS1)

node-a

IP Address:192.168.0.220

8. Test Failover Function

In order to test Failover, go to the **Resources pool manager** function. Then, in the **local node** resources, click on the move to remote node button and confirm this action by clicking the move button.



Open-E DSS V7 Active-Active iSCSI Failover

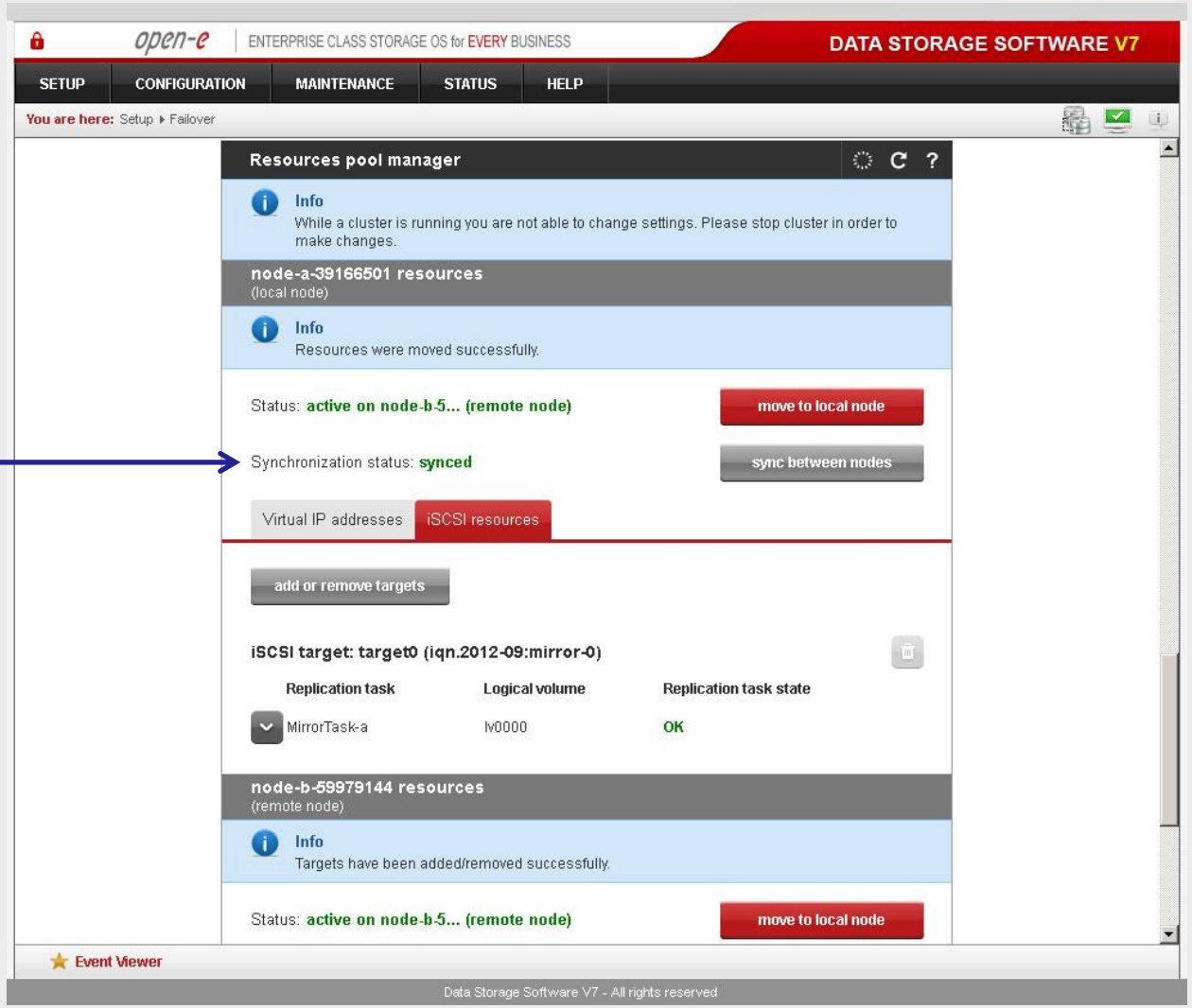
Data Server (DSS1)

node-a

IP Address:192.168.0.220

8. Test Failover Function

After performing this step, the status for **local node** resources should state „active on node-b (**remote node**)" and the **Synchronization status** should state „**synced**".



Open-E DSS V7 Active-Active iSCSI Failover

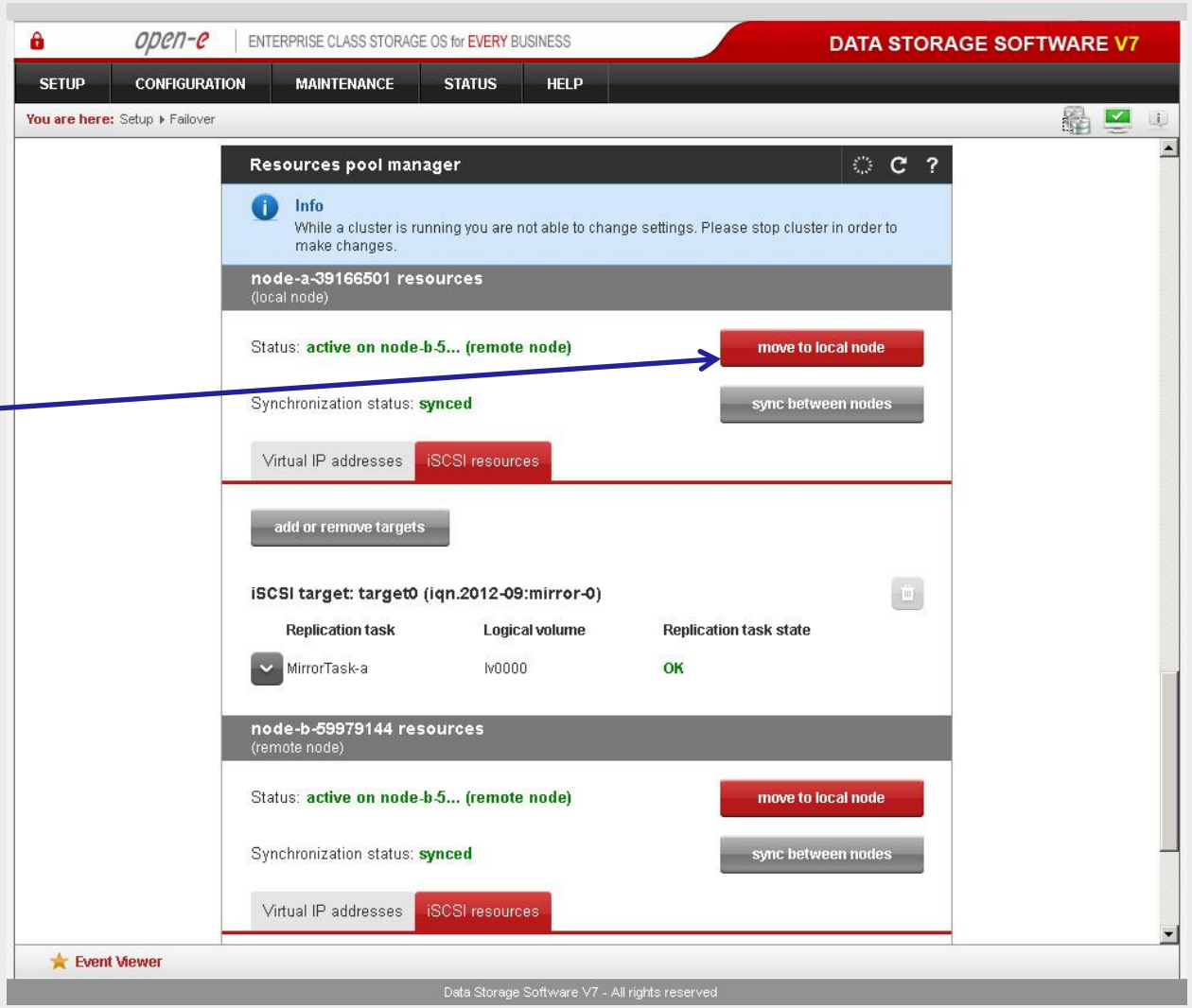
Data Server (DSS1)

node-a

IP Address:192.168.0.220

9. Run Failback Function

In order to test failback, click the **move to local node** button in the **Resources pool manager** box for local node resources and confirm this action by clicking the **move** button.



Open-E DSS V7 Active-Active iSCSI Failover

Data Server (DSS1)

node-a

IP Address:192.168.0.220

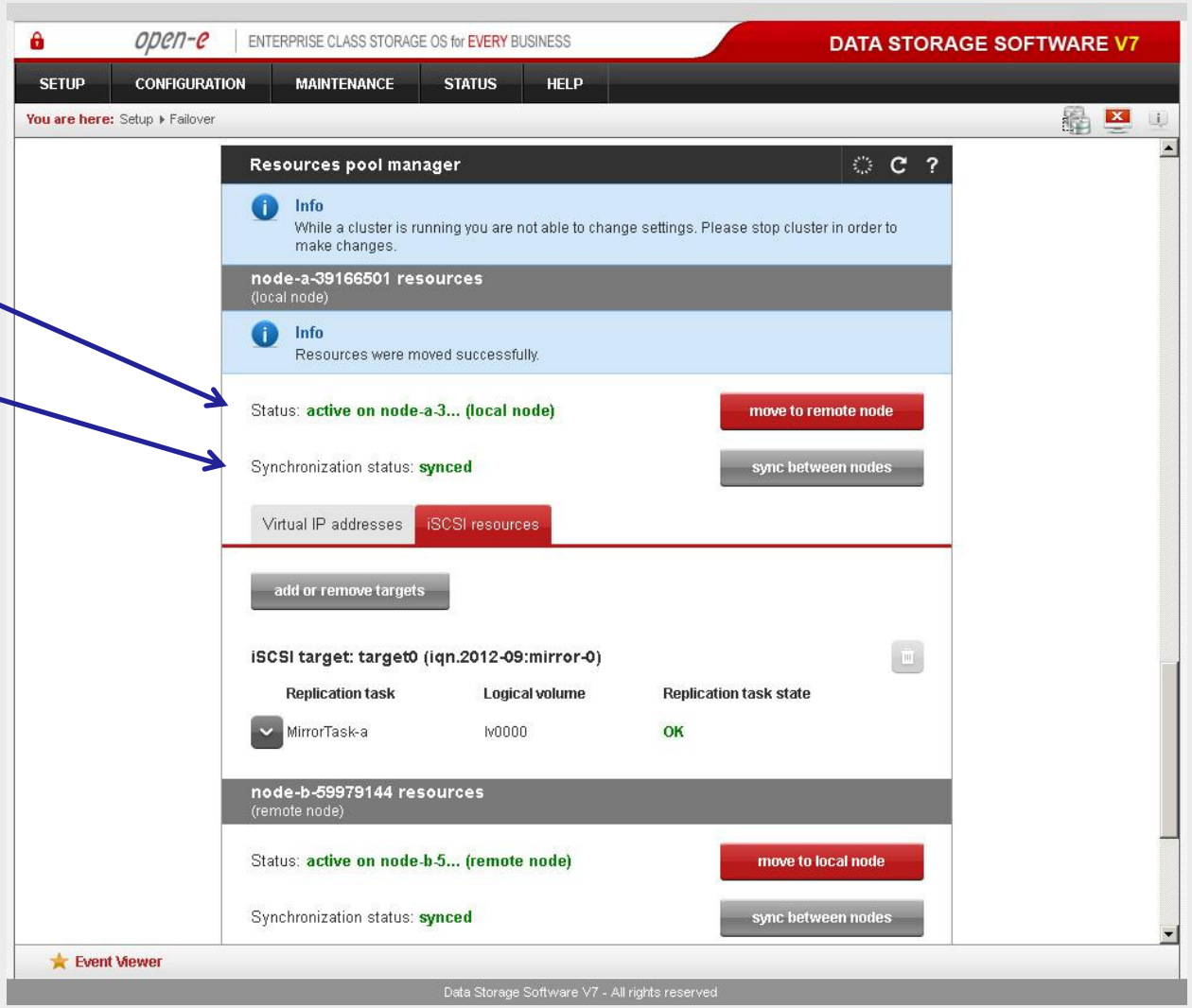
9. Run Failback Function

After completing this step, the status for node-a resources should state „active on node-a (**local node**)" and the **Synchronization status** should state „**synced**". Then, you can apply the same actions for **node-b resources.**

NOTE:

The Active-Active option allows configuring resource pools on both nodes and makes it possible to run some active volumes on node-a and other active volumes on node-b. The Active-Active option is enabled with the TRIAL mode for 60 days or when purchasing the Active-Active Failover Feature Pack. The Active-Passive option allows configuring a resource pool only on one of the nodes. In such a case, all volumes are active on a single node only.

The configuration and testing of Active-Active iSCSI Failover is now complete.



Thank you!

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